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DIVIDING CREEK WATERSHED

Wicomico, Worcester and Somerset Counties, Maryland //

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FINAL ENVIRONMENTAL STATEMENT

Kenneth E. Grant, Administrator
Soil Conservation Service

Sponsoring Local Organizations

Wicomico Soil Conservation District
205 Newton Street
Salisbury, Maryland 21801

Wicomico County Council
Courthouse
Salisbury, Maryland 21801

Worcester Soil Conservation District
428 West Market Street
Snow Hill, Maryland 21863

Worcester County Commissioners
Courthouse
Snow Hill, Maryland 21863

Somerset Soil Conservation District
Chamberlin Building
Princess Anne, Maryland 21853

Somerset County Commissioners
Courthouse
Princess Anne, Maryland 21853

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December 1973

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UNITED STATES DEPARTMENT OF AGRICULTURE

Soil Conservation Service
Washington, D. C. 20250

TABLE OF CONTENT

	<u>Page</u>
SUMMARY SHEET	i
DESCRIPTION	1
Authority for Project	1
Sponsoring Local Organizations	1
Purpose of Project	1
Project Measures	1
Environmental Setting	1
Physical Data	1
Economic Data	6
Fish and Wildlife Resource Data	7
Recreational Resources	9
Archeological and Historical Values and Unique Scenic Areas	9
Soil, Water and Plant Management Status	10
WATER AND RELATED LAND RESOURCE PROBLEMS	11
Land Treatment	11
Floodwater Damage	11
Erosion Damage	12
Sediment Damage	12
Drainage	14
Fish and Wildlife	15
Economic and Social	15
PLANNED PROJECT	16
Land Treatment	16
Structural Measures	18
ENVIRONMENTAL IMPACT	22
Flood Prevention, Erosion and Sediment	22
Agricultural Water Management	24
Fish and Wildlife and Recreation	26
General	28
FAVORABLE ENVIRONMENTAL EFFECTS	29
ADVERSE ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED	31
ALTERNATIVES	32
Floodwater Retarding Structures	32
Flood Plain Levee and Ditch System	32
One-Sided Clearing in Woodland	32
Land Treatment Only	33
Changed Land Use	33
Flood Plain Zoning	33
Do Nothing	34

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RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF MAN'S ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY	35
IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES	37
CONSULTATION WITH APPROPRIATE FEDERAL AGENCIES AND REVIEW BY STATE AND LOCAL AGENCIES DEVELOPING AND ENFORCING ENVIRONMENTAL STANDARDS	38
General	38
Discussion and Disposition of Each Problem, Objective or Issue Raised on the Draft Environmental Statement by Federal, State and Local Agencies, Private Organizations, and Individuals	40
LIST OF APPENDIXES	55
Appendix A - Comparison of Benefits and Costs for Structural Measures	
Appendix B - Letters of Comment Received on the Draft Environmental Statement	
Appendix C - Waterway Construction Permit and Correspondence	
Appendix D - Land Use Map	
Appendix E - Stream Classification Map	
Appendix F - Wood Swamp Location	
Appendix G - Project Map	

USDA ENVIRONMENTAL STATEMENT
Dividing Creek Watershed Project
Wicomico, Worcester and Somerset Counties
Maryland

Prepared in Accordance with
Sec. 102(2)(C) of P.L. 91-190

Summary Sheet

- I. Final
- II. Soil Conservation Service
- III. Administrative
- IV. Brief Description of Project:

The Dividing Creek Watershed is located in Wicomico, Worcester and Somerset Counties, Maryland. The purposes of the project are watershed protection, flood prevention and drainage. Project measures include 82.4 miles of multiple-purpose channel work and land treatment measures on 5,173 acres of cropland, pastureland and forest land.

V. Summary of Environmental Impact and Adverse Environmental Effects:

- Reduce floodwater damage by 85 percent.
- Reduce soil loss in cropland by 10 percent.
- Reduce sediment and nutrient loss.
- Improve soil tilth and soil-plant-water relationship by improved drainage.
- Increase net farm income by \$630 per farm annually.
- Create edge type habitat for wildlife in woodland.
- Provide access for fire control in woodlands.
- Require the clearing of 348 acres of woodland including 28 acres of Type 7 wetlands.
- Partially drain 34 acres of Type 7 wetlands.
- Increase flood peaks at the mouth of Dividing Creek by approximately 18 percent for rare events and with no measurable increase occurring at this point for the more frequent events (2.1 inches of rainfall in 7 hours).
- Increase turbidity and sediment production during construction.
- Increase stream water temperatures in perennial flowing streams representing 8 percent of the proposed channel modification measures.
- Reduce quality of wildlife habitat during construction.
- Disturb fish populations during construction.

VI. Alternatives Considered:

Floodwater retarding structures.
Flood plain levee and ditch system.
One-sided clearing in woodland.
Land treatment only.
Changed land use.
Flood plain zoning.
Do nothing.

VII. Agencies and Others from which Written Comments have been Received:

United States Department of the Interior
United States Department of Commerce
United States Environmental Protection Agency
United States Department of Health, Education and Welfare
United States Department of the Army
Governor of Maryland
Maryland State Clearing House

VIII. Draft Statement was received by the Council on Environmental Quality
on August 4, 1971.

Final Statement was transmitted to the Council on Environmental Quality
on December 26, 1973.

USDA SOIL CONSERVATION SERVICE FINAL ENVIRONMENTAL STATEMENT

Title of Statement: The Dividing Creek Watershed Project
Wicomico, Worcester and Somerset
Counties, Maryland

Type of Statement: Final

Date: December 1973

Type of Action: Administrative

Statement:

1. DESCRIPTION

Authority for Project: Federal assistance through P.L. 566, 83rd Congress
68 Stat. 666, as amended.

Sponsoring Local Organizations:

Wicomico Soil Conservation District
Wicomico County Council
Worcester Soil Conservation District
Worcester County Commissioners
Somerset Soil Conservation District
Somerset County Commissioners

Purpose of Project: Watershed protection, flood prevention and drainage.

Project Measures: The project plan provides for conservation land treatment measures and 82.4 miles of multiple-purpose channel work.

Environmental Setting:

Physical Data - The Dividing Creek Watershed, comprising approximately 41,900 acres on Maryland's Eastern Shore, is located in the western part of Worcester County, the southern part of Wicomico County and the eastern part of Somerset County^{1/}. Dividing Creek originates in Wicomico County

^{1/} All information and data, except as otherwise noted by reference to source, were collected during watershed planning investigations by the Soil Conservation Service, United States Department of Agriculture.

and flows in a southerly direction to about 2 miles northeast of Pocomoke City where it joins the Pocomoke River. At this point Dividing Creek represents 13.7 percent of the total Pocomoke River Drainage area. The lower reaches of the main stream are tidal.

The watershed lies within the Chesapeake subregion of the Mid-Atlantic Water Resource Region. Conditions in the watershed are unlike those in the rest of the region in that increasing water related problems are not the result of increases in population and economic activity. Instead the water related problems being experienced are the result of deteriorated drainage systems and the consequential inability of the farmers to make use of modern farming methods and machinery.

The watershed lies in the Coastal Plain Physiographic Province which is characterized by a huge wedge-shaped mass of sediments consisting of sands and silts with layers of silt, clay and gravel. According to the "Soil Survey" for Wicomico, Worcester and Somerset Counties, published by the United States Department of Agriculture, Soil Conservation Service, area soils are about 90 percent poorly drained but are suitable for agriculture when well managed, drained and protected from flooding.

All of the soils in the Dividing Creek Watershed were formed from unconsolidated Coastal Plain sediments that range from extremely sandy to clayey. The area is dominated by poorly drained, moderately coarse textured soils with sandy substrata.

There are three extensive soil associations in Dividing Creek Watershed. The Fallsington-Pocomoke-Woodstown Association occupies practically all of the watershed area in Somerset County and that portion in Worcester County adjacent to the lower part of Dividing Creek. About 50 percent of the entire watershed area contains soil in this association. It is largely wooded, with high proportion of poorly drained, moderately coarse-textured soils. Drainage is the main problem, but there are minor areas that are very sandy, droughty and unproductive. All of the soils in this association require regular liming and fertilization in order to produce reasonably good crop yields.

The second most extensive soil association is the Pocomoke-Rutledge-Plummer Association. It occupies most of the northern part of the watershed in Worcester County, or about 25 percent of the entire watershed. The Pocomoke-Rutledge-Plummer Association is mostly wooded and dominated by poorly drained, sandy soils that have thick, dark surface layers. All of the soils in this association need artificial drainage before they can be farmed, but are susceptible to being over drained because of their sandy nature. Newly constructed ditches have a tendency to cave. With special attention to fertilization and water management, productivity can be maintained at a high level, especially on the more extensive Pocomoke soils. The main farm crops are corn and soybeans with a few acres of cucumbers, peppers and blueberries also produced. The Lakeland-Klej-Plummer Association

occurs within large areas of the Pocomoke-Rutledge-Plummer Association and is formed in the same kind of sandy sediments. It occupies about 10 percent of the total watershed area. Within this association are dune-like, droughty low sand ridges or rims that surround or border very wet, low-lying sandy soils. The area is largely wooded with the small acreage that is cultivated producing watermelons and cucumbers. Liberal and frequent use of lime, fertilizers and cover crops, as well as supplemental irrigation during dry periods, is needed for these crops. The cultivated areas are susceptible to wind erosion.

The remaining 15 percent of the watershed, which consists of the extreme northern or headwaters area extending into Wicomico County and the extreme part of the watershed in Worcester County, is made up of the dominantly silty or loamy Matapeake, Mattapex, Othello and Portsmouth soils. All of these soils have higher available moisture content for crops than those in the associations described above. Except for the Matapeake and some areas of the Mattapex soils, artificial drainage is needed to achieve high crop yields.

The growing season averages 180 days and ranges from late April to mid-October^{2/}. Average annual temperature is 56 degrees F. and ranges from an average high of 88 degrees F. in July to an average low of 28 degrees F. during the month of January. Temperatures of 32 degrees F. or below occur on an average of 100 days while temperatures 90 degrees or greater occur about 31 days a year. Annual precipitation averages 46 inches and is rather evenly distributed throughout the year with somewhat higher amounts during the summer months of July and August. Snowfall averages 10 inches annually with January and February having the highest totals.

Land use studies show that 99.6 percent of the watershed is rural. Approximately 82.2 percent of the area (34,436 acres) is in forest cover. The remaining 17.1 percent (7,169 acres) is in cropland, 0.3 percent (138 acres) is in pasture and 0.4 percent (157 acres) in other uses, such as farmsteads and highways. Approximately 71 percent of the cropland and 93 percent of the forest land is poorly drained.

The forest lands are composed of three major cover types. The loblolly pine type is the most prevalent and comprises approximately 65 percent of the total forest area. Bottom land hardwoods, largely sweet gum and maple, represent approximately 20 percent with the remaining 15 percent in the mixed oak-pine type.

2/ Climatological Summary for Princess Anne, Maryland. State Climatologist for Maryland and Delaware. United States Department of Commerce, Weather Bureau. June 1969.

Thirty-four hundred acres of the bottom land hardwoods have been classified by the State as Type 7 - wooded swamp, following criteria outlined in "Wetlands of the United States," United States Fish and Wildlife Service Circular No. 39. Soils in Type 7 wooded swamps characteristically are very poorly drained, with the water table at or near the surface most of the year and are subject to seasonal flooding. These wooded swamps constitute 8 percent of the watershed area and are delineated on a map included as Appendix F.

The lower tidal influenced portions of Dividing Creek support Bald Cypress while sweet gum and red "swamp" maple predominate upstream. Some oak (chestnut and swamp white) are also found in the upper areas.

Before agricultural development began within the watershed, the drainage pattern was ill defined. Broad, nearly level upland areas, drained into short tributary draws which emanated from swampy wooded bottom lands. These tributaries served as the main water collectors for the watershed.

As the economy of the Eastern Shore shifted from a maritime base to an agricultural base, large areas of land were cleared. Although the soils and climate were well suited to agriculture, the soil composition and topography caused rainwater to pool on the flatter upland areas. This led to a ditching program that began with individual efforts in the early 1800's and eventually developed into a group activity. Many miles of channel were excavated by Public Drainage Associations during the early part of this century. During this time, virtually the entire watershed was linked by a ditch system that extended to the Pocomoke River. At first the channels worked well, but a lack of conservation measures on the farm and forested areas, together with a lack of maintenance, led to deterioration of the system. Today, in some areas, the only remaining vestiges of this system are well-concealed spoil sites.

There are approximately 49 miles of streams in the watershed which can be classified as perennially flowing streams. These include the main stem of Dividing Creek up to about McGrath Road, the Pusey Branch Prong up to approximately .8 miles above Halfway Station Road and the lower portions of some of the larger tributaries such as Pollitts Branch and Prong 1. These have been previously modified by man but in many cases now have practically no remaining defined channel. The lower reach of the main stream is tidal to a point approximately 2 miles upstream from Maryland Route 364. The upper portions of the above-mentioned streams and the remaining tributaries are either intermittent or ephemeral streams, previously modified by man. The intermittent streams generally flow during the wetter periods of the year with deeper holes retaining water throughout the year. Approximately 56 miles of the streams within the watershed have been classified as intermittently flowing. The remaining drainageways of the watershed are ephemeral

and generally man-made, flowing only during periods of surface runoff. Estimated extent of the ephemeral ditches in the watershed is approximately 133 miles. The stream classification is shown on a map included as Appendix E.

Water quality standards for this watershed are contained in "State of Maryland Water Resources Regulation 4.8 - General Water Quality Criteria and Specific Water Quality Standards," dated April 1969 and are the same as those set down in "Water Quality Standards Summary for the State of Maryland - Document WQS24-001" by the United States Environmental Protection Agency and Maryland Department of Natural Resources. These standards call for the maintenance of a minimum water quality where man's activities affect the natural stream environment and provide ". . . for the conservation of water quality where such quality is good and satisfactory" They specify that water quality in all tributaries of Pocomoke River, which includes Dividing Creek, shall be maintained suitable for water contact recreation, propagation of fish, other aquatic life and wildlife, agricultural water supply and industrial water supply. For these uses the Water Quality Standards specify that:

- (1) Fecal coliform cannot exceed 240 Most Probable Number per 100 milliliters.
- (2) Dissolved oxygen concentrations must not be less than 4.0 milligrams per liter at any time, with a minimum monthly average of not less than 5.0 milligrams per liter.
- (3) pH values must not be less than 6.0 nor greater than 8.5, except where they occur naturally outside the range.
- (4) The temperature elevation must not exceed 10 degrees Fahrenheit above natural water temperatures, with a maximum temperature of 93 degrees Fahrenheit.

It appears that present quality of all flowing water in Dividing Creek and its tributaries is within the limits of State Water Quality criteria. During normal flows, Dividing Creek and its tributaries are practically clear (less than 10 milligrams per liter turbidity). In the lower wooded swamp areas, the water takes on a rich, brown organic stain and carries a moderate amount of suspended organic matter or detritus.

The contribution of nitrates and phosphates to the streams from commercial fertilizers is variable. Most fertilizers applied to cropland are utilized by the crop. Low amounts of nitrates normally enter the ground water. During periods of high water tables, specifically during the summer storms on partially saturated soils, the soil quickly becomes saturated and fertilizers are carried directly into the drainageways along with a portion of recently applied pesticides. As the water table recedes, dissolved nitrates are trapped in the ground water and become unavailable

to plants. However, almost all residual pesticides and fertilizers in the waters are degraded or utilized in the long reaches of wooded swamps before entering the Pocomoke River.

Economic Data - The watershed is almost entirely rural with an agrarian economy based primarily on the production of grains, truck crops and poultry with some income derived from forestry operations.

Land within the watershed is, for the most part, privately owned. However, several parcels of land totaling 4,850 acres are state-owned and are part of the Pocomoke State Forest. There are no incorporated towns in the watershed and developments are found mainly along major highways and at road intersections. The largest cities in the vicinity of the watershed include Pocomoke City (population 3,573), located 2 miles south of the watershed, and Salisbury (population 15,252), the largest town on Maryland's Eastern Shore, located 6 miles to the northeast of the watershed.

Of the 414 privately held properties, 340 are farm operating units with the remaining 74 properties ranging 1 to 9 acres in size. Average farm size for Worcester and Somerset Counties is 156 acres. Average farm value including buildings is \$62,850.

Although over 90 percent of the watershed area lies within the boundaries of these two counties, land values are not alike. Average land value for the two counties is \$404 per acre. In the watershed, well-drained land is priced at about \$350 per acre while poorly drained land is valued at about \$150 per acre.

The principal crops produced are corn, soybeans and truck crops. Presently, average yields for corn and soybeans are 50 and 15 bushels per acre, respectively. Principal truck crops grown include watermelons, cucumbers, tomatoes, beans and peas.

The watershed area is served by the Penn Central Railroad and United States Route 13 which parallel watershed boundaries on the west and south and link Pocomoke City, Princess Anne and Salisbury to major population centers on the East Coast. Another spur of the Penn Central and United States Route 113 serves the watershed area on the eastern boundary. The average farm-to-market distance to one of these centers is less than 10 miles using the existing system of secondary roads within the watershed. There are several market places, principally at road crossings scattered throughout the watershed.

Several agriculturally related industries operate in or near the watershed. Salisbury has two major industries, the Green Giant Company and the Crown

Cork and Seal Company. These plants, at full capacity, employ approximately 670 people. Census data shows that 57 percent of the farmers in the watershed rely on off-farm employment for additional income at least part of the time and that 37 percent work off the farm over 200 days per year ^{3/}. The remaining 43 percent of the farmers are engaged in full-time farm operations. Of the full-time farm operations, 44 percent rely on poultry farming for additional income, 33 percent derive their entire income from truck cropping and 23 percent rely totally on row crops. Farms in the Delmarva Peninsula produce only 80 percent of the corn needed to supply its broiler industry's demand for feed grain. All grain produced in the watershed is milled and used locally except for some soybean by-products that are exported. Poultry processing plants have been established to process the local broiler supply.

Employment for the watershed and especially for Somerset County is seasonal because of the food industry which includes seafood, as well as agriculture. Average unemployment rates for 1972 in Somerset, Worcester, and Wicomico Counties are 11.6, 5.6 and 5.0 percent, respectively. Using the month of peak employment for comparison, the unemployment rates for Somerset, Worcester, Wicomico Counties are 6.5, 4.1 and 2.3 percent, respectively. Somerset County historically has had a high unemployment rate.

The 1969 Census of Agriculture for Worcester and Somerset Counties, Maryland shows that approximately 70 percent of farm income and sales is derived from grain, with truck crops a distant second. It also shows that 33.0 percent of the farms in Worcester County and 41.7 percent in Somerset County have sales of over \$40,000, while farms with sales less than \$2,500 represent only 29.6 and 16.2 percent, respectively. The annual market value of all products sold, including forest products, averages \$42,251 per farm for Worcester County and \$53,089 for Somerset County. Average net farm income for the two counties is \$6,500 and \$7,200, in that order. Five percent of the farms have a net income of less than \$3,000.

Fish and Wildlife Resource Data - Wildlife resources in the watershed are abundant and support moderate hunting pressures. Deer, rabbit, quail, gray squirrel and raccoon furnish most of the hunting opportunity. Waterfowl populations are low although the wooded swamp provides excellent habitat for wood ducks. The 3,400 acres of wooded swamp also provides habitat for woodcock, raccoons and some mink and otter and furnishes refuge areas for deer and other wildlife species. Migrant mallards and black ducks also make some seasonal use of the streams and swamps.

^{3/} United States Bureau of the Census of Agriculture, 1969, Volume I. Area Reports Part 23, Maryland. United States Government Printing Office, Washington, D. C. 1972.

The Southern Bald Eagle, a federally declared endangered species, ranges through the lower portion of the watershed. The nearest known active eagle nests are located on the Pocomoke River several miles above and below Dividing Creek. This area is also utilized by Osprey. No other known rare or endangered species dwell in the watershed.

The mixed oak-pine type woodland and bottom land hardwood support moderate to high populations of deer (2 - 4 per 100 acres), squirrel (15-25 per 100 acres) and other associated animal species. The extensive pine forest land supports low populations of most wildlife, except for temporarily high populations in recently harvested areas. Turkeys have been released and are becoming established. The open land areas of the watershed afford habitat for moderate to high populations of bobwhite quail (10 per 100 acres), rabbit (20 - 30 per 100 acres) and associated upland wildlife. Perimeters of farm woodlands and ditches overgrown with brush and trees provide abundant escape cover for quail; however, safe grassy nesting cover and late winter food are often in short supply. Hunting pressures for quail and rabbits are generally low with fair success. Geese currently use the cropped fields during the fall and winter for feeding.

The perennially flowing portions of Dividing Creek and its major tributaries provide habitat for resident and anadromous fish. According to fish collections made by the Maryland Department of Chesapeake Bay Affairs (since absorbed into the Maryland Department of Natural Resources) in the spring of 1969, anadromous alewives, or "branch herring," annually migrate and spawn in the lower reaches of Dividing Creek up to the vicinity of Fleming Road. Shad and perch utilize the lower portion of Dividing Creek. Detailed fish population studies have not been made on Dividing Creek or similar streams in Maryland. However, fish population studies were made in Delaware under the supervision of the Delaware Division of Fish and Wildlife during the summer of 1972, by rotenoning 100-yard stream segments. These studies were conducted approximately 80 miles north of the watershed on streams similar to those in the upper perennially flowing portions of Dividing Creek. The sampling indicated that the smaller, 4-to 10-foot wide streams with perennial flow, support up to a dozen species of small fish, including pirate perch darters, mud minnows, golden shiners, chub suckers, several species of small sunfish, two species of bullhead up to nine inches long in deeper holes, grass pickerel up to nine inches long and numerous small eels. Except for the few larger bullheads, the studies determined that little potential recreational fishery existed and that to date, these streams were not being fished. The lower reaches of intermittent streams supported about 8 species averaging somewhat smaller in size. In most of the streams, fishing pressures are very light. In their report of March 31, 1967, biologists from the Maryland State Department of Game and Inland Fish

(now the Maryland Fisheries Administration) stated that fishery resources are practically nonexistent from the headwaters to Fleming Road, and little fishing pressure was indicated to the tide line near Maryland Route 364.

Recreational Resources - Recreational activities in the watershed area are centered around hunting and fishing. The Pocomoke State Forest is open for public hunting and managed for upland wildlife. In addition, the State manages the privately owned Foster Estate for public hunting. State laws require written permission for hunting on private land and about three-fourths of the private land is open to the general public through this procedure. Hunting is restricted to organized hunting clubs on about 20 percent of the land. The Pocomoke State Forest also provides opportunities for hiking, picnicking and nature study. Of the 11,506 acres which comprise the State Forest, 4,850 acres are within the boundaries of the Dividing Creek Watershed. There are no other known public recreational facilities within the watershed. Some recreational fishing takes place in the lower portions of Dividing Creek for pickerel, sunfish and bass. Dividing Creek is navigable by shallow bottom boats and canoes from the Pocomoke River for about one mile upstream to Route 364. The remaining portions are not easily accessible except at road crossings. The Maryland Comprehensive Outdoor Recreation and Open Space Plan suggests that acquisition and development of areas for fishing, camping and picnicking in accordance with the Scenic Rivers program has potential in Dividing Creek.

Archeological and Historical Values and Unique Scenic Areas - The National Register of Historic Places lists no archeological or historical sites within the watershed. The State Liaison Officer, Division of Federal, State and Private Agency Assistance, National Park Service, United States Department of the Interior, has indicated in a letter to the Soil Conservation Service, that his staff has found no historical or archeological values in the Dividing Creek Watershed. The Pocomoke River, and its tributaries, has been designated by the State of Maryland as a scenic river. By law, development is to be limited to activities such as fishing, hunting, hiking, horseback riding, nature and geological interpretation, scenic appreciation and other programs through which the value of these areas as a scenic river could be appreciated and enjoyed by the general public.

The scenic values of Dividing Creek are limited due to the fact that it is not readily accessible by boat or on foot. Visual access is limited to four road crossings on Dividing Creek.

A unique area known as the Cypress Swamp is found on the Pocomoke River approximately five miles downstream from the outlet of Dividing Creek. This Cypress Swamp does not extend into the Dividing Creek Watershed.

There are, however, scattered cypress trees along the Pocomoke River and in the lower reaches of Dividing Creek.

Soil, Water and Plant Management Status - Land use trends within the watershed indicate that utilization of open land, available for agricultural purposes, will continue for the foreseeable future. Presently, 91 percent of the watershed's cultivated cropland is in row crop production and the remaining 9 percent cultivated is devoted to truck crops. Approximately 70 percent of the cultivated land is in need of drainage. An additional 456 acres of land that was in crop production is now idle because of inadequate drainage.

According to predictions made by the United States Department of Agriculture, Economic Research Service, the acreage in the watershed committed to row crops will increase while that committed to truck crops will decrease within the next 50 years. A University of Maryland publication entitled, "Agriculture '76," projects that both row and truck crop production will remain essentially the same during the 10 -year period 1976 to 1986. Forest land use will probably be dictated by the forest product industry leading to increased recreational usage with time.

The Soil Surveys for Wicomico, Worcester and Somerset Counties have been published and can be used as a basic tool by the local decision makers and individual landowners to guide them in adequately managing soil and water resources.

The Soil Conservation Districts have actively sought to relieve water related problems by providing technical assistance to landowners for the installation of land treatment measures where needed. However, their efforts have been unsuccessful where drainage outlets have deteriorated. With drainage outlets clogged, water from high water tables and seasonal ponding of surface water inundates the land and inhibits the efficient use of farm machinery and cultural operations.

Of the 340 operating farm units in the watershed, 100 or 29 percent are district cooperators owning or operating on a total of 23,539 acres. Soil Conservation Service field office records indicate that 71 of these cooperators have developed basic conservation plans covering 8,185 acres. These records also show that essential conservation treatment has been established on 323 acres of forest land. Conservation land treatment measures applied to date include conservation cropping systems, crop residue use, drainage mains and laterals, pasture management on farmland and hydrologic cultural operations and fire control on forest land. Forest management practices are being installed in cooperation with the Maryland Forest Service. The objective of forest management on public & private lands is to produce pine in pure stands for pulp and lumber.

Forest fire protection is provided by the Maryland Forest Service in cooperation with the United States Forest Service through the Clarke-McNary Cooperative Fire Control Program and local volunteer fire departments. Neither present nor future fire occurrence justifies additional measures beyond the present program. Other current Federal-State forestry programs include Cooperative Forest Management, Cooperative Forestation and Cooperative Insect and Disease Control. Given protection, care and management, the woodlands are expected to increase their contribution to the general economy of the watershed.

Water and Related Land Resource Problems:

Land Treatment - Excess floodwater and inadequate drainage on farmlands constitute the major land treatment problems. These problems stem from inadequate group outlets which have limited the effectiveness of drainage systems already installed on some farms and have been a deterrent for the construction of others.

One consequence of the inadequate drainageways is that wet field conditions in the fall limit the amount of acreage which can be planted with cover and green manure crops, hence exposing the fields to destructive erosion processes.

Capital is available to install more land treatment measures; the limiting factor is the excess moisture condition. With protection from flooding and with improved drainage, landowners will be better able, both physically and financially, to install needed land treatment measures.

Floodwater Damage - Flooding results from both out-of-bank flow where the channels are blocked and inundation of large areas due to accumulation of surface water. Broad areas of the flat uplands are inundated since existing channels are inadequate to convey the floodwater downstream. Heavy crop losses from this type of flooding occur about 1 year in 5 with minor losses annually. The flooding accompanies local thunderstorms and occasional tropical storms occurring more frequently during summer after crops have partly matured, and results in heavy damages. The average annual crop and pasture damage is estimated at \$44,720.

The majority of this damage is occurring on 5,122 acres of cropland with only minor damage reported to pastureland.

About 32,360 acres of forest land are also subject to flooding. Forest land damages were not evaluated monetarily, as silvicultural studies on the effect of this type of flooding have not been made.

Flooding also causes problems for individual homeowners. Wet yards and driveways and poorly functioning septic fields are experienced in the wetter periods of the year.

Road and bridge flood damages occur at 110 points where roads cross the channels. Road fill is washed away at pipes, culverts and bridges. Damages to road shoulders and in some cases to the roadbed itself occur at times of flood.

Erosion Damage - Present gross sheet erosion rates in the watershed amount to approximately 7.7 tons per acre per year for cropland, 0.28 tons per acre per year for pasture and 0.14 tons per acre per year for forest land. The rate of removal or delivery ratio of the eroded soil from fields and forests to the streams is low, partially as a result of interrupted drainage but also because of the overall low relief of the topography.

There are no cropland gullies, hence, the main erosion sources are streambanks and roads. Presently, streambanks are eroding at the annual rate of approximately 35 tons per stream or channel mile. All of the soil eroded from streambanks is delivered to the immediate stream environment but this amount is reduced considerably downstream due to the rapid settlement of sands and the low stream gradients and velocities. Erosion from road surfaces, shoulders, ditches and right-of-ways are the most critical from a rate per unit area consideration and are the most costly from a standpoint of erosion damages alone. Erosion is proceeding at an estimated rate of 1,167 tons per mile per year for paved roads and 1,215 tons per mile per year for gravel or dirt roads. About half of the gross soil erosion produced is delivered as sediment to streams within the watershed but the amount delivered to the stream environment below the watershed is less. Annual gross erosion totals are estimated at 55,201 tons from cropland, 4,821 tons from forests, 39 tons from pastures, 6,090 tons from streambanks and 88,099 tons from roads.

Maintenance and repairs necessitated by erosion include the periodic grading of road shoulders to obliterate rills that are hazards to motorists, repair of bridge abutments threatened by rills and gullies, repair of ditch banks and right-of-ways to prevent enlargement of rills and repair of rills in fields and farm lanes to prevent soil loss and damage to costly farm machinery. About 10 percent of the soil eroded from the fields and forests will be transported from the watershed. The remaining soil removed by sheet erosion processes may contribute to the soil nutrients in the fields and forests that lie at lower elevations than the sources of the material.

Sediment Damages - Sediment deposited on fields and in forests does not damage the overall fertility or productivity of the land. The slow rate of buildup and the overall fertility of the sediment, allows it to

become incorporated into the existing soil structure without detrimental effect. Most of this sediment is derived by sheet erosion processes from areas that have some topographic relief. Sediment deposition occurs in those areas, often in the same or adjoining field, where the slopes flatten out.

The single most damaging aspect of sedimentation occurs as a result of sediment deposition in on-farm and group drainage systems. Loss of drainage capacity from sediment deposition in these systems is largely responsible for the crop and pasture damage discussed under "Floodwater Damage."

Added costs from sedimentation of channels and farm ditches are incurred in the maintenance or reconstruction necessary to continue their function. In the past, farm ditches required cleaning of accumulated sediment on a time table varying from 5 to 20 years and averaging 10. Cost for this work averages 25 cents per linear foot. Since there are approximately 500,000 feet of on-farm ditches in the watershed, the average annual maintenance cost to area farmers is estimated at \$12,500. Sediment deposited in farm ditches is derived mostly by sheet erosion processes from cropland although the practice of plowing too close to the ditches has also caused the premature filling of some ditches. The difference in the 5 to 20 year life spans of farm ditches can be accounted for by maintenance and proper care.

Sediment deposited in group channels emanates from all erosion sources. Part of the sheet erosion transported from area fields and forests, all of the erosion products from streambanks and a large amount of the material eroded from roads, is delivered to the channel or stream environment. Of this amount, a certain percentage will be transported past the watershed area while the balance remains and gradually fills the channels. No figure for the cost of sediment removal from group channels is available, possibly because in the past there has been no removal maintenance. Consequently, the rate at which the channels filled is not definitely known. However, of the channels now needing reconstruction, 29.6 percent were originally constructed about 1910, 52.1 percent about 1920, 13.0 percent about 1940, 2.0 percent about 1950 and 3.3 percent about 1955.

Information on sedimentation rates of road ditches is available. One county reports that it is necessary to remove this sediment every 2 to 4 years at a cost of 25 cents per linear foot of ditch. Since the watershed contains over 74 miles of roads and highways, the annual costs for this cleanup amounts to an estimated \$36,000. This sediment comes from area fields and forests by the sheet erosion process in part but is predominately derived from road surfaces, shoulders, ditch banks and right-of-ways.

The sediment transport out of the watershed from the various erosion sources is dependent on the delivery ratio for the various types of erosion and place of origin. Other factors contributing to the amount of sediment transported are: size of drainage area, nature of sediment being transported and the function of natural or man-made features that may retard or assist sediment transport. Normally, 10 percent of the sediment derived by sheet erosion processes would be delivered to the mouth of the watershed. However, the effects of interrupted drainage, relatively coarse nature of watershed soils and overall low relief and gradient of topography and streams will reduce this to an estimated 8 percent. All the soil derived from streambank erosion will enter the immediate stream environment but only about half of this will be transported from the watershed. Of the soil eroded from area roads, about 50 percent will be transported to the immediate stream environment and half of this will be transported from the watershed. These high delivery ratios can be attributed to the positive drainage characteristics of the roadways. Considering the above, the average annual sediment transport out of the watershed was estimated at 4,805 tons from sheet erosion (mostly from cropland), 3,045 tons from streambank erosion and 22,025 tons from roads for a total of 29,875 tons per year or approximately 23 acre feet per year. This can be expressed as about 360 milligrams per liter for direct runoff.

Total monetary damages from sediment amount to approximately \$ 70,000 per year based on cleanout of farm ditches, reconstruction of group channels and maintenance of roadside ditches. Additional damages occur to area streams from sediment pollution and to the Pocomoke River below the watershed, but could not be evaluated. Monetary damages from erosion and sedimentation were not used in computing costs and benefits and do not make up any part of the economic evaluations for project justification.

Drainage - Seasonal high water tables adversely affect an estimated 71 percent of the cropland and 93 percent of the forest land in the watershed. Landowners and operators have not been able to establish effective on-farm drainage measures because of inadequate outlet channels. Poor drainage conditions have prevented farmers from meeting desired planting and harvesting schedules, limited crop diversification and precluded the implementation of modern farming techniques. Wet soil conditions limit the use and effectiveness of lime and fertilizers and prevent the proper cultivation necessary for adequate weed control. The high fall water table affects crop harvest by preventing access to the fields by heavy, modern harvest machinery and limits the fall planting of cover and green manure crops.

Total crop losses are often sustained in low areas where ponding is experienced for extended periods. Overall crop yields are presently reduced by 25 to 50 percent during years when flooding and periods of excessively high water tables are experienced.

T. W. Edminster and R. C. Reeve^{4/} writing on the effects of poor drainage cover such items as: shallow and inefficient root development; poor aeration in soil affecting reduction in nutrient uptake by plants; delayed and retarded germination and development of plants; poor plant resistance to disease; poor soil structure, compounded by inefficient farm operation; and reduced biotic activity in the root zone.

According to Edminster and Reeve, the quality and quantity of crops grown are reduced by damages resulting from flooding and high water tables. Shallow root penetration in high water table soils limits plant root development making crops less able to withstand periods of drought. Full development of the root system allows plants to make more efficient use of nutrients for plant growth and quality.

Septic drain fields function improperly due to periodic high water tables caused by the lack of adequate surface outlets. Poor drainage also causes problems associated with maintenance of roads. Wet foundation soils necessitate frequent repairs on paved roads and regrading to eliminate ruts on unpaved roads. School buses, mail carriers and farm-to-market traffic all depend on the road system as the primary means of transportation.

Fish and Wildlife - There has been very little implementation of a positive management program to benefit upland wildlife in the watershed except in the Pocomoke State Forest area under the direct supervision of the State of Maryland. The scarcity of herbaceous borders along existing ditches and woodlands resulting from close cultivation, and the lack of adequate cover in some cropland areas, limits farm game. During storm periods, nests of rabbits, quail and other ground nesting birds are often destroyed since the best nesting cover is generally in low, weedy depressions and along existing ditch banks that are the first to flood. The fishery resource is limited in the watershed due to the lack of suitable habitat.

Economic and Social - The watershed's economic and social problems vary between the three counties. Low income and unemployment are the major problems, with the highest rate of unemployment, 6.5 percent, in Somerset County as of August 1973. In 1966 this county was classified

^{4/} Drainage Problems and Methods, 1957 Yearbook of Agriculture, T. W. Edminster and R. C. Reeve. United States Government Printing Office, Washington, D. C.

as an economically depressed area by the United States Department of Commerce. It still remains in that status. The Somerset Redevelopment Corporation was established to attract new industry, thereby developing the area and reducing the unemployment rate. As of August 1973, the unemployment rates for Wicomico and Worcester Counties were 2.3 and 4.1 percent, respectively, compared to the State's average rate of 4.1 percent. Per capita income for all three counties lags behind that of the State's average of \$3,512. In 1972, Somerset, Wicomico and Worcester Counties' per capita incomes were \$1,935, \$2,886 and \$2,461, respectively.

Most of the farms in the watershed are family owned and operated. Percentage of tenancy ranges from 6.1 to 9.6 percent within the three counties. Few of the farm owners employ hired labor, in fact, 57 percent of the operators work off of the farm part-time themselves.

Planned Project:

The planned project consists of the installation of land treatment measures on 5,173 acres of land and the installation of structural measures consisting of 82.4 miles of multiple-purpose channel work.

Total installation costs for the project are estimated as follows:

	<u>PL-566 Funds</u>	<u>Other Funds</u>	<u>Total Funds</u>
Land Treatment	136,640	328,800	465,440
Structural Measures	1,090,330	406,946	1,497,276
 Total Project	 1,226,970	 735,746	 1,962,716

Total construction costs are broken down as follows:

<u>PL-566 Funds</u>	<u>Other Funds</u>	<u>Total</u>
758,085	252,694	1,010,779

Land Treatment Measures - The land treatment measures associated with the project will be planned, installed and maintained primarily on privately owned land by individuals or groups of landowners and operators in cooperation with the local Soil Conservation Districts.

The installation of these measures depends solely on the attitude of individual landowners toward the land treatment program. The local Soil Conservation Districts function to provide information and encourage soil and water conservation practices.

Cropland conservation practices to be emphasized during the project period include drainage mains and laterals, conservation cropping systems, crop residue management, and critical area planting, to include seeding of ditch banks, berms and spoil areas.

Drainage mains and laterals are the basic components of the land treatment program, since they extend the water disposal benefits from the group outlets to the private farms. Subsurface drains may be used as a supplemental measure where soils are suitable. Land smoothing may also be employed where the ground is suitable.

Wildlife habitat management measures, such as planting shrubs and grasses and timing ditchbank mowing so as not to disturb nests and retain winter cover, will be emphasized to improve quail and rabbit resources and general upland wildlife habitat in the area. Landowners will also be assisted in installing ponds and shallow water impoundments for waterfowl.

Technical assistance for the installation of land treatment measures will be provided by the Soil Conservation Service. Based on past response to similar programs, the project expects to accomplish the development of about 160 conservation plans and the application of land treatment measures on 2,540 acres of cropland and 43 acres of pastureland. Technical assistance will be provided under an accelerated program during the project installation period. The Maryland Department of Natural Resources will furnish the technical assistance necessary for proper wildlife management. To insure adequate and proper woodland treatment along with maximum watershed protection, woodland owners will be provided with technical guidance in installing the measures affecting approximately 700 acres of forest land. Technical assistance will be used for:

1. Preparing 60 woodland management plans, involving 1,800 acres, which will outline practical measures to be applied in the immediate future to maintain and improve the hydrologic conditions of forest land. The management plan will take into consideration the needs and desires of the landowners and will provide recommendations that will enhance the multiple use values of the forested area, such as recreation, wildlife, timber, and any other use important to the owner.
2. Stimulating landowner interest for participating in the watershed program.
3. General planning, supervision and inspection of the program.

The Maryland Forest Service will install needed soil and water conservation measures in the Pocomoke State Forest as part of the present land management program. Under this program, 350 acres of trees will be planted and hydrologic cultural operations will be established on 440 acres.

Landowners and operators will maintain the land treatment measures on their farms under agreement with the Soil Conservation Districts. The Districts periodically will inspect the land treatment measures to determine maintenance needs, encourage the landowners and operators to perform maintenance and furnish District owned equipment for this purpose.

The forest land treatment measures will be implemented on private land and maintained by landowners with technical assistance furnished by the Maryland Forest Service in cooperation with the United States Forest Service through the Cooperative Forest Management Program. The Maryland Forest Service will assume the maintenance of the land treatment measures within the Pocomoke State Forest.

Structural Measures - The structural measures included in the proposed project consist of 82.4 miles of multiple-purpose channel work to improve conveyance, control and disposal of excess drainage and floodwaters in the agricultural portions of the watershed. The channel work will be constructed primarily in the upland portions of the watershed and will extend downstream only as far as necessary to provide adequate outlets to the areas above.

The planned structural measures will be installed in accordance with the provisions of a Waterway Construction Permit issued by the Maryland Department of Water Resources (now the Water Resources Administration). A copy of the Waterway Construction Permit, issued for this project is included as Appendix C. All of the conditions of this Waterway Construction Permit are upheld in the planned project. The locations of the major segments of the channel system, totaling approximately 42.7 miles, are shown on the project map (see Appendix G). The remaining 39.7 miles of channel work consists of minor tributaries to the major segments and control inlets for all channels, and a contingency length to allow for adjustments during final designs. It should be noted that at the request of local landowners and the Maryland Department of Natural Resources, the Pusey Branch bypass was deleted. Prong 3 was also deleted from the original work plan because it was not economically justifiable from a benefit-cost standpoint.

The starting points for the proposed channel systems were determined from engineering studies of the carrying capacity of existing drainageways. The size of the proposed channel is dependent upon the drainage area above the segment under consideration, the slope or gradient of the channel, and the roughness or resistance to flow characteristics of the channel itself. Channel capacity was designed to accommodate the removal of the excess rainfall associated with a 24 hour storm that has a frequency of occurrence of approximately once in four years. The proposed channel depths average 4 feet. The relative range of the channel sizes

involved is given in the following table:

PROPOSED CHANNEL WORK

<u>Bottom Width</u>	<u>Length</u>	<u>Percent of Total</u>
4 feet or less	61.2 miles	74.3
5 to 10 feet	12.0 miles	14.6
11 to 20 feet	4.4 miles	5.3
Over 20 feet	4.8 miles	5.8
Total:	82.4 miles	100.0

Of the 82.4 miles of channel work planned, 6.5 miles or 8 percent will be installed on perennial streams, 17.3 miles or 21 percent will be installed on intermittent streams and 58.6 miles or 71 percent on ephemeral streams. Approximately 81.4 miles of the total 82.4 miles of proposed channel work will consist of enlargement of previously modified channels that were constructed during the period 1910 to 1955. The remaining one mile of the project will be a new channel constructed on Prong 1 of Lower Dividing Creek. This channel will be constructed along the edge of the woods and will serve as an outlet for the agricultural land to the north of the existing wooded swamp (see Appendix G). Construction of Prong 1 will be controlled so that minimal disturbance will occur in the swamp itself.

The installation of the ditch system through woodland will involve the clearing of a right-of-way of varying widths, depending upon the size of the designed channel. Where one-sided construction operations are possible, the off-side clearing widths will be held to the minimum needed to facilitate access for maintenance operations. Cleared debris will be windrowed along the edge of the woods. Excavation spoil piles will be shaped to minimize overbank flow, and controlled inlets installed.

Significant trees, such as large gums, oaks and den trees and shrubs that have scenic, aesthetic and wildlife value will be preserved. Uncleared screens will be retained at road crossings and will be supplemented by plantings where practical during and after construction activities.

Spoil obtained from ditch excavation in cropland will be spread so as not to interfere with normal farm operations. To prevent overbank flow into the ditch, the spoil will be sloped along with ditch banks. Surface runoff will enter the ditches through controlled inlets. The controlled inlets allow the surface runoff to enter the channel system in such a way as to prevent erosion damage to the ditch banks. This is accomplished by the use of pipe structures and/or side channels with low bottom gradients.

Newly constructed ditch banks will be seeded at the end of each day's construction operation as a requirement of the construction contracts. All berms and shaped spoil areas will be seeded as soon as practical after excavation in an effort to minimize erosion and provide food and cover for wildlife. An orchard grass-legume seeding mixture, supplemented when appropriate with millet and sericea lespedeza, will be used to maximize wildlife benefits. An 8 foot wide berm will be fertilized, limed and seeded along the ditches through cropland. Through woodland, a 16.5 foot strip as well as spoil piles and any other disturbed areas will be seeded.

In-channel sediment traps will be incorporated into the final construction plans where needed to trap and collect sediment produced during construction activities. These traps will be constructed by undercutting the channel bottom grade by .2, to 4 feet. Maintenance will be performed during construction to assure adequate capacity within traps.

Other features set forth in the conditions of the Waterway Construction Permit, such as debris barriers and in-stream filters, will be incorporated into a sediment control plan prepared prior to the start of construction activities. This sediment control plan will be subject to approval by the Maryland Water Resources Administration as a condition of this Waterway Construction Permit.

Reconstruction of the channel system through cropland areas in the past has involved clearing of all woody vegetation that has grown up along old ditch alignments. In accordance with Item 14 of the Waterway Construction Permit and the correspondence pertaining thereto (see Appendix C), clearing and spoil disposal will be carried out mainly on the north and east sides (erroneously shown in the Waterway Construction Permit as north and west sides) of the channels through wooded or shrub areas. The brush and trees in cropland will be piled for disposal by the individual landowners.

Construction activities will be suspended from March 1 through June 30 on Costen, Cokesbury, Dublin and Tony's Branches and Prongs 1 and 2 during the anadromous fish runs. This provision was included so that the increased sedimentation and turbidity associated with construction will not interfere with the reproduction processes of the aquatic wildlife.

The National Register of Historic Places lists no places of historic value that will be affected by the installation of the proposed project. Should significant items of archeological value be found during construction activities, the National Park Service, the Maryland Historical Trust and the Maryland State Archeologists will be notified.

An acceptable operation and maintenance agreement will be executed prior to issuance of invitations to bid for the construction contract. Operation and maintenance will be the responsibility of the local sponsoring organizations. The Soil Conservation Service will participate in the maintenance program to the extent of furnishing: (1) technical assistance to aid in the inspections, (2) technical design information necessary for the maintenance program, and (3) technical assistance to aid in the development and revision of operation and maintenance plans. Maintenance entails mowing; brush control; stabilizing, fertilizing and reseeding critical areas; bar removal; debris removal; structure maintenance; stabilization measures; keeping access roads open for maintenance; assuring the good condition of pipes; and maintenance of a vegetated strip along the channels in both crop and woodland. The Maryland Wildlife Administration will assist in the development of maintenance plans in order to maximize wildlife values.

2. ENVIRONMENTAL IMPACT:

The project will have a significant environmental impact on the Dividing Creek Watershed. This impact will be the greatest and most noticeable in the upland agricultural areas and will decrease to insignificance in the lower downstream portions. Installation of the project will enable more efficient use of 14,000 acres of uplands for the production of crops, pasturage and forest products. Appendix "A" gives a summary of annual benefits, annual project costs and benefit-cost ratios.

Flood Prevention, Erosion and Sediment - The channel system will be capable of removing, within a 24-hour period, the runoff associated with a one-day, 4-year frequency storm. This will reduce average annual flood damage to cropland and pastureland within the project area by approximately 85 percent. The channel system will cause an increase in flood peak flows in the watershed due to the more efficient removal of storm runoff. Within the project areas, these flows are expected to be contained within the channel system during all but the major storm events. The greatest increase in peaks will occur at the lower ends of channel construction. These increased peaks will be dissipated as they travel through the natural downstream reaches, becoming insignificant by the time they reach the tidal portions of Dividing Creek.

The Soil Conservation Service, in conjunction with the Agricultural Research Service, United States Department of Agriculture, coordinated a study to determine the hydrologic effects of channelization on the downstream areas in the watershed. The Pollitts Branch channel segment of the project was analyzed. Using a hydrologic model, HL-73, which is being developed by the Agricultural Research Service, climatological data such as rainfall, evaporation and temperature for the last five years and watershed parameters, such as soils information, cropping patterns, land slope, and length-to-watercourse were analyzed for the present watershed conditions. Projected watershed conditions with the project, including increased channel capacities, lowered water table, cropping patterns, and modified soil properties, were then analyzed.

The results of the study show that the peak flow at the downstream end of the Pollitts Branch channel, during the passage of Hurricane Camille in 1969, would have increased from 5⁴ cubic feet per second under present conditions to 223 cubic feet per second with the project installed. This, however, is a rare event and compares with an increase from 28 cubic feet per second to 73 cubic feet per second for a December 1969 storm that produced 2.1 inches of rainfall in 7 hours. This is a fairly frequent event which can be expected to occur more than once a year.

The study shows that these increases will be modified by valley storage in the downstream watershed reaches to the extent that the peak flow from

the Pollitts Branch system delivered to the mouth of Dividing Creek is increased from 33 cubic feet per second to 39 cubic feet per second for Hurricane Camille and is insignificant for the December 1969 storm. This amounts to a 18 percent increase for the Hurricane Camille event.

Conversely, the results of the study, with respect to overall rainfall runoff relationships during the 5-year study period, shows that under project conditions total runoff would be reduced by only one half a watershed inch or less than 1 percent.

The project, therefore, will have little effect on the timing and quantity of fresh water discharges into the Pocomoke River from Dividing Creek.

Flooding associated with individual home lots will be reduced by the project since it will provide relief to problems being experienced such as wet yards, driveways and poorly functioning septic fields.

During construction and immediately thereafter, sediment deposition and turbidity in the streams will be increased. The total sediment to be delivered to the stream during construction activities is estimated at 373 tons per mile, most of which will be retained in sediment traps in the bottom, compared to the present rate of approximately 35 tons per mile from streambanks. After the planned spoil shaping and vegetative measures are established on the ditch banks and right-of-ways, sedimentation rates are estimated to be 15 tons per mile. The provision for seeding of newly constructed ditch banks daily to be included in construction contracts, will provide for bank stabilization and the establishment of protective vegetative cover within a minimum amount of time. Sediment traps to be constructed at appropriate locations in the channel will reduce downstream sedimentation during and after construction activities.

Total sediment delivered to the mouth of Dividing Creek under present conditions is estimated at 29,875 tons per year (23 acre feet per year). During construction activities, this yield will increase to about 32,747 tons per year (25 acre feet per year) or an increase of 2,872 tons per year. Following installation of the proposed project measures, channel work and land treatment practices, the sediment delivered to the mouth of Dividing Creek is estimated to decrease to 27,635 tons per year (21 acre feet per year), for a net total reduction for the life of the project of 60,900 tons or 47 acre feet. The net total reduction was estimated with the increase in sediment produced during construction activities taken into account.

It is estimated that gross erosion rates on cropland can be reduced from 7.7 to 6.9 tons per acre per year, or a reduction of about 10 percent, due to land treatment made possible by improved drainage outlets.

An unpublished study, "Preliminary Fact Sheets on Pollution from Agriculture in Ohio," January 1971, points out that sediment, as the carrier of agricultural chemicals, is the greatest pollutant from farmland. Phosphorus is strongly adsorbed by soil colloids and the concentration in solution in contact with the soil is very low. Likewise Dieldrin and similar persistent insecticides are also mostly attached to the soil and transported into water bodies by erosion and sedimentation processes. Nitrogen in nitrate form is very water soluble and moves with water over land and through the soil profile.

Nitrogen is also taken out of the air and released in water of ponds by blue-green algae and in the soil by nitrogen fixing bacteria. The Ohio studies showed that runoff from natural watersheds is often nearly as high in nutrients as that from well-fertilized cropland. The use of nitrogen fertilizers at recommended rates can balance crop removal and losses by volatilization. The Ohio studies concluded that soil and water conservation practices along with the use of recommended rates of fertilizer can greatly reduce losses of agri-chemicals in sediments and runoff water. The significant point of the Ohio study and other studies is that with proper application of fertilizer, pesticides, and conservation practices, the losses of agri-chemicals are not only greatly reduced but pollution potentials are well within tolerable limits.

Agricultural Water Management - The planned channel system, when coupled with the installation of on-farm drainage mains and laterals, will result in a lowering of the water table in the cropland areas as well as in the wooded areas bordering the ditch system. The ground water levels that now exist at or near the ground surface will be lowered to a depth equal to that of the ditch bottom during dry periods in intermittent or ephemeral segments, or to the level of flow in the perennially flowing segments. The drawdown effect lessens as the distance from the ditch increases. Depending on the physical properties of the soil, the water table may be lowered to some degree for distances up to 200 feet laterally from the ditch.

This lowering of the water table will also change the soil-water-plant relations on 71 percent of the cropland and 26 percent of the woodland.

After the construction of the outlet systems and improvement of on-farm drainage systems, the individual landowner or operator will be able to pursue an aggressive vegetative land treatment program. Vegetative land treatment measures can modify soil structure to provide for needed aeration, permeability and water absorption capacity. It is a fact that increased soil permeability affects surface runoff during storm periods, therefore, reducing sheet erosion and resulting nutrient and pesticides losses.

The project provisions for drainage and floodwater outlets will make possible more efficient plant use of applied fertilizers. Interviews with landowners and operators found that sufficient lime and fertilizers are now being used to produce desirable yields. These yields are not attained, however, because wet soil conditions prevent plants from making efficient use of the applied fertilizers. Evidence to support this contention is contained in K. Lawton's study of corn reported in "Soil", the 1957 Yearbook of Agriculture. Lawton found that absorption of all nutrients is reduced by poor drainage.

An overall deterioration in water quality from sediment and runoff containing significant quantities of fertilizers and pesticides will not accompany the project. The improved drainage attendant with the project will more than compensate for intensified farm operations by allowing the agricultural chemicals in the soil to be utilized more effectively by the plants. A "storage reservoir," created between the ground surface and the lowered water table, will allow the movement of rainfall into the ground rather than moving off slowly as surface runoff. During a longer duration rain, surface runoff will occur, after the "reservoir" has been filled, and will be carried away by the outlet ditches provided. This delay in the start of surface runoff will result in reduced erosion and chemical loss. In combination with the above provisions, spoil shaping in cropland and the maintenance of an 8-foot wide permanently vegetated strip along the ditch banks will reduce chemical losses directly into the channels.

Of the 456 acres of watershed cropland no longer cultivated, 322 acres are idle because of wet soil conditions. The project will make these 322 acres of idle land suitable for cultivation once again. A breakdown of this idle land as to location follows: 123 acres lie in the vicinity of Upper Dividing Creek, 45 acres lie in the Pusey Branch area, 41 acres lie in or along Prong 1, and 33 acres lie in the Dublin Branch area. The rest is scattered rather evenly along the other major branches of the proposed system.

The lowering of the water table within the top 2 to 4 feet of the ground surface will have little effect on existing water supplies for domestic and agricultural use. As pointed out in Bulletin 16, "The Water Resources of Somerset, Wicomico and Worcester Counties," published by the former Maryland Department of Geology, Mines and Water Resources, the storage and utilization of rainfall in areas where the water table is at or near the surface, "is limited to a considerable degree by the lack of storage space between the water table and land surface." If heavy pumping is imposed upon this aquifer, dewatering of the upper zone will occur around the pumped wells. The dewatered zone will provide additional storage, and permit capture of recharge which is rejected at present.

The hydrologic cultural operations to be installed as land treatment measures on the forest lands will alter hydrologic conditions which, in turn, will reduce sedimentation and increase ground water recharge. Well managed and protected forest cover produces litter from which the humus layer develops. This protects the soil and increases infiltration and percolation rates and water storage capacity.

Subsurface drainage, where channels are constructed through or adjacent to forest land, will increase the potential forest fire hazard during dry periods due to the lowering of the water table along the channels. However, channel maintenance roads will provide ready access to forested areas and with present fire control facilities, adequate protection will be afforded.

The relocated channel, shown as Prong 1 on the project map, will serve as an outlet to the agricultural land north of the existing Type 7 wooded swamp and will divert runoff from 240 acres that would normally flow through the swamp. The area draining into the swamp will be reduced from 1,775 acres to 1,535 acres or 13.5 percent. Subsurface drainage from the swamp into the bypass will be limited due to the higher location of the bypass channel. Eight acres of swamp will be cleared at the outlet end of the bypass channel.

Fish and Wildlife and Recreation - The project will necessitate the clearing of 320 acres of woodland consisting mainly of bottom land hardwoods with some areas of loblolly pine. In addition, 28 acres of wooded swamp classified by the State as Type 7 Wetlands will be cleared and another 3 $\frac{1}{4}$ acres of wooded swamp partially drained.

Although the wooded swamp to be affected represents only 2 percent of the Type 7 Wetlands in the watershed, it will reduce the habitat available for woodducks, woodcock, raccoons and other wildlife species.

The swamp losses will occur at the lower end of construction on Pusey Branch (1 acre), Upper Dividing Main (16 acres), Pollitts Branch (3 acres) and Prong 1 (8 acres). The 3 $\frac{1}{4}$ acres of wooded swamp to be partially drained lies outside the right-of-way along the lower 600 feet of construction on Upper Dividing Main. As the result of the project, flood peaks in this area will increase during storms and the berms along the constructed channel will inhibit return flow. However, during dry periods, when there is no standing water, ground water levels may decrease as much as six inches.

The required clearing of the right-of-ways for the channel work will reduce the total woodland habitat in the watershed by approximately 348 acres, or 1 percent. The cleared right-of-ways will provide travel paths for deer and provide shrub browse, forbs and grass for deer food. They will also provide grassy nesting areas and brooding habitat for quail and other birds.

The release of oaks and other mast producing trees along the edge of the clearing will increase their mast production. The right-of-ways through extensive woodlands have the same effect as strip clearing which is a standard practice for improvement of woodland wildlife habitat.

Clearing of brushy growth in the bottom and on one side of the farm ditches will mean a loss of hedgerow type habitat used by openland wildlife. The permanent seeding and maintenance of an 8-foot grass strip along the constructed farm ditches will provide 70 acres of feeding and nesting areas for quail and rabbit. The seeding mixture for the total right-of-way in woodland and cropland will include clover, lespedeza and orchard grass, which is suitable for wildlife habitat. Maintenance will allow growth of briars, vines and small brush that will be mowed only as often as necessary to prevent trees from becoming over 2 inches in diameter.

Construction activities will cause a temporary disturbance of wildlife and wildlife habitat in the areas adjacent to the proposed channel work. The disturbance will be in the form of machine noise, movement in and out of work areas and general work activities.

Fish population will be disrupted during construction but no species will be eliminated. Within a few years after construction, the fish population will stabilize again as cattails and bulrushes and other sedges become re-established in and along the channel bottom. The perennial flowing channel systems in the area characteristically are narrow, meandering, and low flowing averaging 6 to 10 inches deep except at road crossings and on curves where they run deeper. After construction, the reduced shade tree covering will result in somewhat higher summer water temperatures in perennial flowing streams where channel work is planned and for a short distance downstream. These perennial flowing streams represent 8 percent of the channels proposed for modification. The average maximum July water temperature will be slightly less than the 88 degrees Fahrenheit average maximum air temperature. During the extended hot periods, midday water temperatures will reach the upper 80's. Fish populations in these small, warm water streams are not expected to change significantly from pre-project conditions.

Through woodland, the cleared areas along the channel system will provide access ways for hunters. The project will not affect the Pocomoke Forest located in the watershed.

The impact of the proposed project on the Scenic River values of the Pocomoke River will be limited to the subtributaries and upper portions of the tributary stream in the Dividing Creek subwatershed of the Pocomoke River. During construction, the scenic values of the stream

associated with clean-flowing water will be temporarily lessened downstream due to the increased sediment generated by excavation operations. The stream is visible to the public only at county road crossings and screens of trees at these points will be left or replaced to mitigate this impact.

General - The completion of project installation with its combination of land treatment and structural measures will have both a direct and indirect effect on the economic and social values in the watershed.

Improved drainage and protection from flooding will result in the stabilization of yields and an increase in the quality of crops thus enabling the farmers to employ committed factors of production more efficiently on approximately 5,100 acres. Idle land scattered throughout the watershed that has been too wet for cultivation will be made suitable for cultivation. These changes will increase net income per farm by approximately \$630 annually.

The change in net farm income will have a corresponding effect on local business as this modification in income affects the local purchase and sale of farm products and items used in production as well as other non-agriculturally related purchases. Local secondary benefits both induced by and stemming from the project will be \$35,074. Other installed projects have resulted in the painting, maintenance and repair of farm houses and out buildings, and improved management of farmlands. In turn, the general public is affected by the resultant change in land values and the tax base. It is estimated that the added income will enable farming to be more competitive with nonfarm businesses. This will help to maintain an attractive and productive rural way of life for the farm families within the watershed and to conserve the land resources for future use.

The project will have only a minor effect on the labor force. However, it is estimated that 24 man-years of employment will be generated during the installation period.

3. FAVORABLE ENVIRONMENTAL EFFECTS:

- a. Flood reduction and drainage benefits will be provided to approximately 14,000 acres of cropland, pasture and forest land.
- b. Average annual floodwater damage to crop and pastureland will be reduced by approximately 85 percent.
- c. The project will provide relief to individual homeowners in project area from flooded yards and poorly functioning septic fields.
- d. The average annual sediment yield from the watershed will be reduced from 29,875 tons per year to 27,635 tons per year or approximately 8 percent.
- e. Improved soil conditions in the upper soil profile due to drainage will facilitate movement of applied nutrients into the soil for use by plants.
- f. Improved drainage outlets will encourage and make practical the pursuit of an aggressive land treatment program.
- g. Installation of land treatment practices on cropland will improve soil tilth, soil permeability and increase water absorption capacity of the soil.
- h. Increased infiltration of surface waters into the soil along with spoil shaping and maintenance of an 8 foot vegetated strip along ditch banks will reduce runoff and erosion that carry pesticides and fertilizers along with sediment to the stream.
- i. Approximately 322 acres of presently idle cropland will be made suitable for agricultural use by improved drainage.
- j. Accessways for fire control in woodland will be provided.
- k. Edge type habitat and travelways for wildlife will be provided by the cleared right-of-ways through woodland.
- l. Seeding along ditch right-of-way will improve nesting and cover for quail and other wildlife.
- m. The more efficient use of land, labor and capital on approximately 5,100 acres of cropland will be possible as a result of improved drainage and flood control.
- n. Annual net farm income will be increased an average of \$630 per farm.

- o. The local economy will be strengthened by the improvement of the agricultural situation.
- p. The project will provide the opportunity to maintain an attractive and productive rural way of life for the farm families within the watershed and to conserve the land resources for future use.
- q. Approximately 24 man-years of employment will be provided during the installation period.

4. ADVERSE ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED:

- a. The flood flows will be increased at the mouth of Dividing Creek by approximately 18 percent for rare events with no measurable increase at this point for more frequent events.
- b. Sediment and turbidity will be increased in the downstream areas during the installation period.
- c. Project will increase potential forest fire hazard through effects of subsurface drainage along the channels.
- d. The project will necessitate the clearing of 320 acres of woodland and 28 acres of wooded swamp and the partial draining of an additional 34 acres of wooded swamp.
- e. The woodland clearing will reduce the habitat for woodducks, woodcock, raccoons and other wildlife species.
- f. The one mile of new channel to be constructed on Prong 1 will reduce the area draining into the swamp by 240 acres or 13.5 percent.
- g. Clearing along the ditches will reduce hedgerow habitat used by open land wildlife.
- h. The machinery noise and general activity will reduce the quality of wildlife habitat during construction.
- i. Fish population will be temporarily disturbed by construction activities.
- j. Stream water temperatures will increase in the perennial flowing streams where construction takes place due to the reduction of shade trees along the streambanks.
- k. The project will temporarily decrease the scenic values downstream during construction, due to the increase in sediment generated by excavation operations.

5. ALTERNATIVES:

In the course of developing the Work Plan for the Dividing Creek Water-shed, various alternatives were studied for their potential in solving the existing water and related land use problems. These alternatives, their relative merit and potential environmental impact are outlined below:

Floodwater Retarding Structures - In the upper reaches of the watershed, where the major problem areas are located, the topography is essentially flat. Field inspection and map study indicated that no suitable sites are available for floodwater retarding structures.

Flood Plain Levee and Ditch System - This alternative was proposed by the United States Department of the Interior and consists of a series of levees and ditches paralleling the flood plain as shown in Appendix B. The purpose of this system is to prevent back flooding and provide for release of upland runoff into the flood plains at designed gaps in the levees. This type of measure can be utilized only where a defined flood plain exists and where ditches can be designed with sufficient grade to carry upland runoff around the levees. Sufficient grade does not exist for the installation of this type of system. Flooding which occurs is the result of standing water on large flat acres that is unable to drain off due to blocked outlets and low topographic relief.

One-Sided Clearing in Woodland - The alternative of one-sided clearing in woodland would reduce clearing by approximately 15 percent or 52 acres as opposed to the proposed project. With this alternative, the total amount of clearing involved would amount to 296 acres as compared with 348 acres under the present proposal. One-sided clearing would mean less disturbance of existing tree and brush stands and a smaller increase in water temperatures associated with the decrease in shade trees.

In evaluating one-sided clearing as an alternative to the planned project, it was found that ditches with bottom widths of 30 feet or greater would be impossible to construct from one side employing the size of equipment normally used for the type of job proposed. Furthermore, experience shows that in most jobs of this type, construction mats are needed to provide ground stability for excavation equipment. In advancing these mats, trees on the uncleared side would be damaged causing maintenance problems later on from dead branches falling into the ditches. Another potential maintenance problem is posed by trees located too close to the banks falling into the ditches from lack of root support. A minimum clearing width on the nonconstruction or off-side allows spoil shaping to curb lateral overbank flow into the ditch, which is essential to the prevention of ditch bank erosion. This minimum 12-foot clearing width

on the off-side also provides an access for the performance of ditch bank maintenance. The minimum clearing width on the off-side would still provide shade for the perennially flowing portions of the stream involved in construction activities that could be accomplished from one side.

Land Treatment Only - The implementation of a project consisting solely of land treatment measures would eliminate the adverse environmental impacts caused by channel construction. Land treatment measures such as conservation cropping systems, crop residue management and pasture management could be implemented and would aid in reducing sedimentation and erosion. There is very little potential, however, for solving the major problems of flooding and high water tables by this approach. These problems in the past have been the deterrent to the further investment required for the installation of land treatment measures. On-farm land treatment measures such as drainage mains and laterals, land smoothing and tile drains cannot be installed unless adequate outlets are provided.

Changed Land Use - This alternative would convert frequently flooded cropland areas to less extensive uses such as pasture, woodland or wildlife habitat. The most frequently flooded or least easily drained land could be planted to commercial timber or developed for wildlife purposes. Less frequently flooded areas could be converted to pasture use. Those areas that experience and can tolerate infrequent flooding could remain in cropland.

This alternative would result in increased timber production and would avoid the major physical environmental impacts associated with channel construction. However, this alternative would have major detrimental effects on the social and economic character of the area. To convert cropland to uses having lower net economic returns would force more farmers to seek part-time employment off the farm. A reduction in the supply of locally grown feed grains would put a strain on the poultry industry from increased transportation costs associated with importing feed grain. If these increased costs forced the poultry industry to cut production volumes, then a reduction in available jobs would result. Furthermore, any increase in the land available for wildlife stemming from a change in land use would be partially offset by the absence of cropland which serves as a source of food to many species.

Flood Plain Zoning - The flooding problem that exists within the watershed is due to water standing on large flat areas in the upper reaches of the watershed. Standing water on these areas is the result of blocked outlets and low topographic relief. No definable flood plain

exists. To zone the entire area as flood plain and restrict its use to pasture and other uses not including cultivated crops would have the same consequences as the Changed Land Use Alternative.

Do Nothing - To do nothing would perpetuate the existing, progressively worsening erosion, flooding and drainage problems, insofar as agriculture is concerned. As existing drainage patterns continue to aggrade because of deposition of sediment and vegetative debris, drainage and flooding on 14,000 acres of cropland and forest land will gradually worsen. As this occurs, the land will be relegated to lower orders of use in terms of economic returns to landowners. This alternative would drastically operate to the detriment of agricultural resources in the watershed. This alternative would also preclude the planned installation of land treatment measures on 2,540 acres of cropland, 43 acres of pastureland and 2,590 acres of forest land. Without the ability to effectively reduce existing flooding and high ground water levels, the incentive of individual farmers and landowners to apply land treatment and wildlife habitat management measures would also be lacking due to their generally limited economic situation. One of the effects of this alternative could be forcing a change in land use from cropland to woodland with a loss of farm wildlife habitat. The net average annual monetary benefit that would be foregone by not implementing the project is estimated at \$130,342 (see Appendix A). This foregone benefit would increase in the future as conditions worsen.

6. RELATIONSHIP BETWEEN LOCAL SHORT TERM USES OF MAN'S ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG TERM PRODUCTIVITY:

The watershed is now rural and is expected to remain so with little change in land use. The construction activities to clear the right-of-way and reconstruct the channels will result in temporary losses to fish and wildlife. After construction, the reestablishment of vegetation by the seeding of slopes and berms, will return most values lost. The temporary loss of food and nesting cover for some types of wildlife will be recovered in about three years. This new growth containing more herbaceous and grass type plants, will provide more nesting cover and increase the quality and variety of food available for many species of wildlife. The watershed project with its combination of structural and land treatment measures, is compatible with projected long term uses of land in that its purpose is to keep the watershed predominately agricultural with land available at such a price and with such characteristics that a person can make a living by farming.

There are several water resource projects in the Middle Atlantic Region with planning objectives similar to those of the Dividing Creek Watershed. Their main objectives include: the development of adequate group outlet systems to permit the installation of individual drainage systems on the farms; the treatment of farmlands, including **forestland**, to improve soil-water-plant relationships; to reduce soil erosion; to increase the efficiency of farm operations; and the general improvement of the economic conditions of the farm families and their communities.

With the maintenance program carried out in accordance with the provisions of the operation and maintenance agreement, the channel work installed should provide the benefits for which they were designed throughout the 50-year project life and beyond.

Twenty-nine applications have been submitted for assistance under PL-566 within water resource subregion 0206, which includes the area that drains into the Upper Chesapeake Bay below the Maryland-Pennsylvania State Line (excluding the Potomac River, and coastal drainage from Cape Henlopen, Delaware) to Chincoteague Inlet, Virginia. Eighteen of these projects have been authorized for planning, fourteen have been planned, six are under construction and six have been completed. Within the Maryland portion of the Pocomoke River Basin, of which the Dividing Creek is a part, eight applications for PL-566 assistance have been received. Planning has been authorized for six projects with planning, construction, and land treatment measures completed on five watersheds.

The five completed watershed projects within the Pocomoke River drainage area represent approximately 11 percent of the total drainage area. Including Dividing Creek in the total would change this percentage of the drainage area in which PL-566 watershed projects are involved to approximately 25 percent, with construction activities occurring in 18 percent of the total Pocomoke River watershed area.

7. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES:

The proposed channel work will commit approximately 62 acres of the 3,400 acres of ecologically valuable wooded swamp to other uses. Thirty-four acres of wooded swamp adjacent to the channel will be partially drained although there may be some confined ponding behind spoil piles on this acreage after completion of the project. An additional 28 acres of the wooded swamp will be destroyed in the clearing operation. The remaining 3,338 acres of wooded swamp will remain in that status. An additional 320 acres of woodland will be converted to channel, spoil areas and travel-ways.

8. CONSULTATION WITH APPROPRIATE FEDERAL AGENCIES AND REVIEW BY STATE AND LOCAL AGENCIES DEVELOPING AND ENFORCING ENVIRONMENTAL STANDARDS:

a. General - Since this project's inception, other State, Federal and Local Agencies, as well as citizen's groups, have made contributions to the formulation and review of the plan for the proposed works. Numerous meetings were held by the local sponsors in working out the objectives and features of the proposed project. Early in 1957, at the request of the three Soil Conservation Districts, the Soil Conservation Service made a determination that the project was eligible for assistance under PL-566. Application was made for assistance under PL-566, approved by the Maryland State Soil Conservation Committee and forwarded to the Administrator of the Soil Conservation Service in July and August 1961.

Preliminary Investigation studies were initiated in 1965 and were completed in July 1966. Upon receipt of the favorable Preliminary Investigation Report, the sponsors (Soil Conservation Districts and Commissioners of each of the three counties) urged the State Conservationist to request planning authorization to develop a Work Plan. This request was forwarded to the Administrator by the State Conservationist.

Planning authorization was granted in July 1968. Notification of this authorization and a request for an expression of interest in helping develop a Work Plan for the Dividing Creek Watershed Project were sent to the following individuals and agencies:

Federal Agencies

District Chief, Water Resources Division, United States Geological Survey

Area Director, Forest Service, United States Department of Agriculture
State Director, Farmers Home Administration, United States Department of Agriculture

District Engineer, Corps of Engineers, United States Department of the Army

Area Director, Mineral Resources Office, United States Bureau of Mines
Regional Director, Bureau of Outdoor Recreation, United States Department of the Interior

Field Supervisor, Fish and Wildlife Service, Bureau of Sport Fisheries and Wildlife, United States Department of the Interior

State Executive Director, Maryland Agriculture Stabilization and Conservation Service, State Office, United States Department of Agriculture

Regional Director, Fish and Wildlife Service, Bureau of Sport Fisheries and Wildlife, United States Department of the Interior

Director, Federal Water Pollution Control Administration
Director, Northeast Regional Office, National Park Service,
United States Department of the Interior

State Agencies

Program Coordinator, Maryland Department of State Planning
Director, Maryland Department of Game and Inland Fish
Director, Maryland Geological Survey
Assistant Commissioner for Environmental Health Services,
Maryland State Department of Health
Director, State Planning Commission
Director, Natural Resources Institute
Director, Maryland Department of Forests and Parks
Director, Maryland Department of Water Resources
Division Chief, Water Quality Survey and Analysis, Department
of Water Resources
State Forester, Maryland Department of Forests and Parks
Director, Department of Chesapeake Bay Affairs
Chief, Natural Resources Management, Department of Chesapeake
Bay Affairs.
Chief, Bureau of Bridge Design, State Roads Commission
State Drainage Engineer, University of Maryland

Close contact was kept with these and private groups throughout the planning stage. Their suggestions both on the work plan and the environmental statement were given consideration and incorporated in the project where feasible.

After receiving initial comments from outside agencies, the Soil Conservation Service, in conjunction with the Department of Natural Resources, reformulated the Work Plan on April 6, 1970. The second work plan draft was again routed to interested agencies for their comments and suggestions. A public meeting and informal field review was held on November 4, 1970, to acquaint the public with the purpose and background of the project and its present status. The meeting was advertised in local newspapers, notices posted and individual letters of invitation issued to conservation agencies in Maryland. The main point of discussion was the need and purpose of the bypass channel at the outlet end of Pusey Branch, a mitigation measure to preserve wooded wetlands. Some local landowners failed to see the need of this bypass but expressed no other unfavorable comments on any of the other features in the Work Plan.

On January 25, 1972, a public hearing was held during which it was decided to drop the Pusey Branch bypass feature and to start construction

at the upper end of the wooded swamp. In September 1972 a revised Work Plan was prepared to reflect the changes made by dropping the Pusey Branch by-pass channel. In September 1973 the Work Plan was again revised to reflect an interest rate of 5 5/8 percent and current construction costs.

b. Discussion and Disposition of Each Problem, Objection or Issue Raised on the Draft Environmental Statement by Federal, State and Local Agencies, Private Organizations, and Individuals

Comments on the Draft Environmental Statement were requested from the following:

Governor of Maryland
United States Department of Health, Education and Welfare
United States Department of the Army
United States Environmental Protection Agency
United States Department of Commerce
United States Department of the Interior
Maryland Department of State Planning (State Clearing House)
Federal Power Commission

The Federal Power Commission did not respond.

SUMMARY OF COMMENTS AND RESPONSES

Each issue, problem, or objection is summarized and a response given on the following pages. Comments are serially numbered where agencies have supplied multiple comments. The original letters of comment appear in Appendix B.

Governor of Maryland

- (1) Comment: "I concur with the revised Dividing Creek Watershed Work Plan subject to the conditions that (1) the final environmental impact statement reflects current project provisions, and (2) the project is implemented in accordance with the State Waterway Construction Permit."

Response: As the result of a public hearing held by the Maryland Department of Natural Resources on January 25, 1972, certain project modifications were requested by landowners and the Department of Natural Resources in order to protect nontidal wetland areas and conform with the spirit of the Maryland Scenic Rivers Law. These modifications were spelled out as conditions 12 and 13 of a Waterway Construction Permit issued for the project July 12, 1972, and included as Appendix C of this Environmental Statement.

The Final Environmental Statement reflects the modifications of the proposed structural measures as contained in the Waterway Construction Permit. The project as now proposed meets all of the conditions of this permit. A discussion with respect to the conditions of this permit and their implementation, is included in the Planned Project section, pages 18 through 20.

United States Department of Health, Education and Welfare

- (1) Comment: "This Department has reviewed the health aspects of the subject project. We offer no comments."

Response: None.

United States Department of the Army

- (1) Comment: "It is suggested that the draft environmental statement include a reference of the Maryland Code (Section 763 of Article 66C) which designates the Pocomoke River including Dividing Creek as a Scenic River."

Response: The Final Environmental Statement has been revised to recognize that the Pocomoke River has been designated as a Scenic River by the State of Maryland. References to the scenic aspects of the Pocomoke River are included in the Environmental Setting section , page 9, and the Environmental Impact section, pages 27 and 28.

- (2) Comment: "Both the Pocomoke River and Dividing Creek are composed of unique natural areas with cypress swamps and wetlands which make the area a sanctuary for aquatic life as well as other wildlife."

Response: The Environmental Setting section of the Environmental Statement has been revised to recognize the existence of scattered cypress trees in the lower portion of Dividing Creek and the unique Cypress Swamp area along the Pocomoke River south of the watershed. The planned project will not affect these areas. The areas of wetlands in the watershed, their value as wildlife habitat, and the impact of the project has been documented in more detail in all sections of the revised Environmental Statement.

- (3) Comment: "The endangered Bryant Fox Squirrel is reported to be in the watershed area by the Maryland Scenic Review Board."

Response: The Delmarva fox squirrel is also referred to as the Bryant Fox Squirrel or the Delmarva Bryant's fox squirrel. According

to a study conducted by Gary J. Taylor, National Resources Institute, University of Maryland, College Park, Maryland, (1973) entitled "Present Status and Habitat Survey of the Delmarva Fox Squirrel (*Sciurus niger cinereus*) With a Discussion of Reasons for Its Decline," "it was learned that this squirrel is now confined to portions of Kent, Queen Anne's, Talbot and Dorchester Counties in Maryland." The areas included in the range of the Delmarva fox squirrel (1971 survey) lie approximately 18 miles west of the Dividing Creek Watershed.

United States Environmental Protection Agency

- (1) Comment: "The final statement should include a location map which delineates the proposed project features. In addition, the final statement should indicate maps detailing present land uses and possible changes in land use patterns resulting from the implementation of the project, including any new lands to be brought into agricultural production."

Response: The final environmental statement includes as Appendix G, the project map contained in the final work plan.

This map delineates the major segments of the channel work. Reference to this map is included in the Planned Project Section on page 18. A map showing the present land use as to cropland and forest land, together with the locations of the major channel segments, is attached as Appendix D. Maps of sufficient scale to show individual fields and the crops being grown are on file in the Watershed Planning Party Office at the Maryland State Office, United States Department of Agriculture, Soil Conservation Service, 4321 Hartwick Road, College Park, Maryland, 20740. The subject of land use changes, resulting from the project, has been restudied since the initial formulation of the project. Many of the soils in the watershed are not well suited to the production of truck crops but produce good yields when used for row crops. The high cost of field labor is also a major limitation to the production of truck crops. Recent studies by the Economic Research Service predict a significant decrease in the acreage committed to truck crop production in Eastern Maryland in the next 50 years while grain production will increase principally due to the demands of the poultry industry.

It is expected that 322 acres of previously cropped land that is now idle will be brought back into agricultural production with the installation of the project. This planned action is documented in the Environmental Impact section, page 25. The location of this presently idle land is also discussed on page 25. Maps of sufficient scale to show the relatively minor changes in land use could not be feasibly included in this report.

- (2) Comment: "We are concerned with potential water quality deterioration resulting from soil erosion and land drainage containing significant quantities of fertilizer and pesticide runoff. The possible adverse environmental effects of more efficient drainage on water quality should be considered for lands that will continue to produce field crops and for lands that will be converted to truck crop production."

Response: The intensified farm operations made possible by the project will not result in a deterioration of water quality. The effects of more efficient drainage on water quality are discussed in the Environmental Impact section, pages 23 and 24. The project will lead to an overall decrease in the rate of delivery of nutrients to the stream system. This will result, first from the lowering of the excessively high water tables which will permit more efficient plant use of fertilizers and create a temporary storage reservoir in the ground, and second from the reduction of erosion rates due to the installation of the land treatment measures.

- (3) Comment: "The project requires drainage or clearing of 110 acres of wetlands. The total environmental impact of this action on the existing flood plain should be discussed in the final impact statement."

Response: As revised, the planned project requires the clearing of 28 acres of Type 7 Wetlands. In addition, 34 acres of wetlands adjacent to the cleared area may experience some minor change in water levels because of its proximity to the modified channel.

The effect this action will have on the total environment is discussed fully in the Environmental Impact section, page 26.

- (4) Comment: "...the effect of speeding surface runoff of rainwater that falls on the Dividing Creek Watershed on the downstream tidal regime (which is utilized by anadromous marine life) should be determined. This information, along with data on any anticipated changes in downstream flooding frequencies resulting from efficient channelization structures, should be included in the final impact statement."

Response: Data on the anticipated changes in downstream flooding frequencies have been developed utilizing a hydrologic model (HL-73) developed by the Agricultural Research Service. The results of that study are presented in the Environmental Impact section, pages 22 and 23. The study shows that peaks at the lower ends of the constructed channel segment will increase significantly for any given event. However, due to valley storage and the long natural reaches between

the channel systems and the tidal portion of Dividing Creek, peaks at the mouth of the watershed will increase by a minor amount. This will result in limited or no impact on the tidal regime and the brackish waters of the Pocomoke.

United States Department of Commerce

- (1) Comment: "The statement does not consider the relationship between the proposed project channel alterations and the brackish waters of Dividing Creek, Pocomoke River and Pocomoke Sound.

We suggest that the statement might be strengthened by addressing conditions and problems that may result from an increase in stream flows and agricultural land drainage. In our judgement, the reduction of water salinity, the increase in sediment load, and the leeching of fertilizers and pesticides could adversely affect the aquatic environment and the commercial and sport fisheries of the project area."

Response: The statement has been revised to include a discussion of the impact of the project on the downstream tidal regime of Dividing Creek and the Pocomoke River. This discussion is included in the Environmental Impact section of the statement. These issues were also raised by the Environmental Protection Agency as comments 2 and 4 and responded to on pages 43 and 44.

United States Department of the Interior

- (1) Comment: "The proposed construction is expected to have a significant detrimental effect on fish and wildlife resources and their habitat."

Response: As discussed throughout the Environmental Impact section of the Environmental Statement, certain unavoidable adverse effects on the area's fish and wildlife resources and their habitat will occur. The principal adverse effects on these resources will result from the clearing of wooded swamps and bottom land hardwoods. In an effort to minimize these impacts, the Pusey Branch bypass and terminal sediment traps were deleted from the original plans, lessening the acreage of bottom land hardwood and wooded swamp habitat to be cleared or drained. This has resulted in a reduction of clearing required from 80 acres to 28 acres of wooded swamp and from 412 acres to 320 acres of bottom land hardwoods. These cleared acreages represent less than 1 percent of each respective type of woodland. The wooded swamp and bottom land hardwood habitat lost will be replaced with a grassy edge-type

habitat. Impacts on the wildlife itself will stem from the temporary scattering of their populations due to construction disturbance. The United States Department of the Interior recognizes that the fishery resources in the project area are not abundant and their value is low. Fish populations will be temporarily disturbed, but not destroyed, from construction activities causing increased turbidity from excavation operations, noise and movement. The major concern expressed was for those portions of the lower Dividing Creek used by the anadromous fish. No construction is planned in these reaches of the stream. Furthermore, to guard against possible disturbance during the anadromous fish runs, construction activities on Unit II and III will be suspended from March 1 through June 30.

- (2) Comment: "The watershed also provides habitat for two rare and endangered species; the Delmarva Bryant's fox squirrel and the bald eagle. . . . There should also be a discussion of the rare and endangered species in the project area and what effects, if any, the project will have on these species or their habitat."

Response: As discussed on pages 41 and 42, Response(3), a study by the Natural Resources Institute indicates that the Delmarva fox squirrel no longer ranges within the Dividing Creek Watershed. The Environmental Statement has been revised to recognize the existence of the bald eagle in the watershed. As mentioned on page 8 of the Environmental Setting section, the Southern Bald Eagle is found to range through the lower portions of the watershed along the Pocomoke River. The proposed measures associated with the project will be constructed in the upland portions of the Dividing Creek watershed and therefore should have no effect on the range or habitat of the bald eagle.

- (3) Comment: "...there is no discussion of the Cypress swamp, a type unique to Maryland and what, if any, impacts this project will have on the Cypress swamp."

Response: This comment is similar to the one raised by the Department of the Army and was responded to on page 41, response(2)

- (4) Comment: "Of particular concern to this Department is the channelization of Pusey Branch and Prong 1 as the work in these areas will affect wooded swamp, the most significant and productive wetlands in the watershed. The wooded swamp constitutes eight percent of the wooded habitat in the project area and it provides the only significant break in the pine and pine hardwood forest. In addition to providing

escape, food and nesting cover for mammals, birds, reptiles and amphibians, the wooded swamps also function as a natural sedimentation trap and assimilative area which protects downstream areas from more rapid eutrophication.

Floodwaters, upon which the existence of these swamps depend, would be routed around the swamps via bypass channels. These bypass channels also would trap surface runoff flowing into the swamps from upland areas which further reduces the supply of water to the swamps. It is estimated that approximately 20 percent of the hardwood swamp habitat would be adversely affected by project construction. Construction of the bypass channels would also affect the salinity regimen in the lower reaches of Dividing Creek due to the hydrological changes. This, in turn, could have an adverse effect on anadromous fish using the stream for spawning."

Response: The project, as originally proposed, would require the clearing of 80 acres of wooded swamp, the partial drainage of 30 acres due to the construction of outlets extending into the swamp and the partial diversion of flood flows around 1⁴8 acres of swamp on Pusey Branch and Prong 1 due to the construction of bypass channels.

As noted in the Response to Comment(1) of the Governor of Maryland on page 40, the project has been reformulated to comply with the Waterway Permit requirements of the State of Maryland. This revision entailed the deletion of the bypass channel on Pusey Branch. The revised project now requires the clearing of 28 acres of wooded swamp, the partial drainage of 3⁴ acres of wooded swamp due to construction of ditch outlets extending into the swamp and the partial diversion of flows around 48 acres of wooded swamp due to the Prong 1 bypass.

The construction activities in the wooded swamp extend downstream only as far as necessary to obtain adequate outlet conditions. The impact of this activity on the affected wetlands is outlined in the revised Environmental Impact section, page 26. The Prong 1 bypass and its effect on the 48 acres of wooded swamp due to the 13.5 percent reduction in contributing drainage area is documented in the Planned Project and Environmental Impact sections of the Environmental Statement. As discussed in the Environmental Impact section, the clearing and partial drainage of the wooded swamp necessitated by the project is not expected to have a material effect on the salinity regimen or on the spawning of anadromous fish in the watershed. The issue of the salinity regimen was also raised by the Environmental Protection Agency and was answered on

pages 43 and 44, Response (4). Fish spawn 6 miles below the limits of the project construction. This 6 miles of unimproved stream will act as a natural buffer catching and assimilating sediment and reducing flood peak flows which might otherwise affect fish spawning activities. As indicated in the Planned Project section, construction in Units II and III (see Project Map, Appendix G) will be stopped during the fish spawning period.

- (5) Comment: "Sediment trap construction downstream from the by-pass channels would destroy wooded swamp which acts as natural sediment traps. Without the upstream, off-channel ditching, these traps would not be necessary and the additional wetland destruction could be avoided. Further, unless the sediment is removed from the traps periodically the channel improvement benefits will gradually be lost. The work plan should specify the frequency of maintenance and who is to do the maintenance."

Response: The Environmental Statement and Work Plan have been revised to drop the bypass channels, with the exception of Prong 1, as discussed in the response to the previous comment. As discussed in the planned project section on page 20, sediment traps will be constructed within the channel itself by undercutting up to 4 feet below design grade at appropriate locations. In conformance with the Waterway Construction Permit, the project sponsors will be responsible for seeing that the sediment traps are cleaned out when necessary during construction operations and that proper ditch maintenance is performed after construction is completed. The sediment traps should not be considered as a replacement for wooded swamps destroyed or drained by the proposed project work.

- (6) Comment: "The report claims that seeding of the spoil banks would create more new habitat for open land wildlife than would be lost by removing brushy growth in the cropland area. This would not be a creation of new habitat but a tradeoff of limited, high quality bottom land forest habitat for deer, turkey, squirrel, the Delmarva Bryant's fox squirrel and the bald eagle for an open land habitat which is already in abundant supply."

Response: Approximately 42.9 miles of edge-type habitat will be created along the cleared right-of-ways in woodland. Strip clearing and the release of mast producing trees in large expanses of woodlands is an established woodland wildlife management practice similar to the right-of-way conditions that will exist following installation of the proposed project. Whether or not strip clearing in bottom land hardwoods, as a practice by itself, would be justifiable in

this case is open to question. However, as discussed on pages 26 and 27 under the Environmental Impact section, the cleared right-of-ways will provide travelways for deer, turkey, shrub browse, forbs, and grass for deer food, and brooding habitat for turkey. In addition, the cleared right-of-ways will provide new habitat for quail, rabbit, and the wide variety of nongame wildlife that utilize edge type habitats. The bald eagle is not known to utilize the northern portions of the watershed where most construction activity will be located. The Delmarva fox squirrel, as discussed on pages 41 and 42, Response (3) of the Department of the Army, is not known to occur in the watershed.

- (7) Comment: "We also believe the beneficial effects to ground nesting birds which will occur as a result of reduced flooding is somewhat hypothetical."

Response: Quail and other ground nesting wildlife use the edges of farm wood lots and ditches overgrown with trees and brush for their nests. However, many of these nests are destroyed by the temporary spring flooding of low areas along existing ditches with poor outlets. Speaking of cottontail food and cover management, Dr. George Hendrickson (1947 - Cottontail Management in Iowa, Trans. 12th N.A. Wildlife Conference) says, "heavy rains and floods drive rabbits temporarily from an area and drown nestlings. Mud covered grass and debris-filled thickets may remain unattractive for a long time." In reference to flood prone nesting areas, Stoddard (The Bobwhite quail, 1936) says, "later they may dry out, and then the quail attracted by the only remaining grassy cover, nest in them. Such areas are natural traps for the birds, however, as the nests are flooded at the first heavy rain."

- (8) Comment: "The destruction of habitat by excavation, the drainage of swamps and other flood plain areas, increased sedimentation and siltation and changes in the hydrologic pattern of the waterway as well as increased nutrient and pesticides expected from land use changes are the major adverse environmental impacts that will occur if the present flood control plan for the watershed is implemented. In view of these impacts, the Department of the Interior must oppose this watershed work plan. We recommend that the work plan be returned to the State Conservationist for reevaluation and revision."

Response: The project has been reformulated by dropping the Pusey Branch ~~bypass~~ resulting in a 4.5-mile reduction in channel work and significantly reducing the project's impact on the wooded swamp. Measures have been implemented to minimize the major adverse

environmental impacts. Some destruction of habitat by excavation is unavoidable. However, where possible, one-sided clearing operations will be employed to minimize this effect (see page 19 under the Planned Project section). Sedimentation and siltation is expected to increase only during construction activities (see page 23, Environmental Impact section). To offset this adverse effect on aquatic life, construction activities will be suspended from March 1 through June 30 during the anadromous fish runs (see page 20, Planned Project section). The effects of changed land use and the attendant change in nutrient and pesticide runoff are discussed on pages 24 and 25 of the Environmental Impact section. Any potential for increase in fertilizer and pesticide runoff associated with intensified farm operations will be more than compensated for by the more efficient plant use of nutrients made possible by the improved plant-soil-water relationships. The project's effect on the hydrologic pattern of the waterways was studied and the conclusions presented on pages 22 and 23 in the Environmental Impact section.

The results of the study show that higher flood peaks will occur only for short periods during storm events in localized reaches immediately downstream from the channel ends and that the long term effect on the overall watershed rainfall runoff relationship would be negligible.

- (9) Comment: "We also suggest that the subsequent studies consider the requirements of Section 11 of the Estuary Protection Act (PL-90-454) regarding non-degradation of estuary. A discussion of the project impact on the estuary should be set forth in this report."

Response: The responses to Comment (4) of the Environmental Protection Agency and Comment (1) of the Department of Commerce dealt with the possible detrimental effects of the proposed project on the downstream estuary. Studies conducted by the Soil Conservation Service in watershed planning and in answering this question, did not uncover any effects which would lead to any significant degradation of the estuary. Should conclusive studies be brought to our attention, then the project will be modified to reduce identified adverse impacts.

- (10) Comment: "During the course of any followup studies we further recommend that serious consideration be given to the substitution of a flood plain levee system as illustrated on the attached sketch for the proposed channelization. The restudy should also provide

the rationalization that was utilized to accept or reject this alternative. This statement should be expanded to discuss flood plain zoning and land uses which are more compatible with temporary flooding than the existing or proposed agricultural use."

Response: The flood plain levee system was considered as a result of this comment and is discussed in the Alternatives section, page 32. A discussion of the flood plain zoning and changed land use alternatives is also included in the Alternatives section, pages 33 and 34 of the revised Environmental Statement.

- (11) Comment: "The environmental impact statement appears to be largely a repetition of the data set forth in the watershed work plan and therefore oriented more toward project justification rather than an unbiased assessment of the environmental impacts of the proposed action. We believe the statement to be inadequate and recommend that it be rewritten to report in a more objective fashion the environmental effects of the project."

Response: The Environmental Statement has been revised to present an unbiased assessment of the environmental consequences of the proposed project.

- (12) Comment: "The major shortcoming of this statement is not recognizing that Dividing Creek, its tributaries, the Pocomoke River and the estuary are segments of an integrated ecosystem. An action in one part of the system will yield a reaction in another part of the system. This is best illustrated in the discussion of the 87 miles of channelization of tributary streams with settling basins whereby no recognition is given to the environmental effects of turbidity, nutrients, pesticides, and hydrologic changes in the downstream segment of the system."

Response: The **final** Environmental Statement discusses the changes in turbidity, nutrient and pesticide runoff and hydrologic relationships which may be brought about by the project, and the effect these changes will have on the entire ecosystem. Using a model study being developed by the Agricultural Research Service, it was determined that the project's longrun effect on the overall watershed rainfall runoff relationship would be negligible. It was further determined and substantiated by outside studies, that the improved drainage made possible by the project will more than offset any increase in nutrient and pesticide runoff by enabling plant root systems to utilize agricultural chemicals in the soil more efficiently. These relationships are explored in detail in the Environmental Impact section of the Environmental Statement, pages 22 through 25.

- (13) Comment: "The statement indicates that the project will stimulate more truck farming in the area. The statement should contain a discussion of the environmental effects of increased sediment runoff, pesticides and nutrients entering the waterways as a result of this land use change."

Response: The issue of increased sediment, pesticides and nutrients entering the waterways as a result of a possible change in land use was also raised by the Environmental Protection Agency and responded to on page 43, Response (2). In summary, the increased drainage made possible by the project will enable the plants to absorb agricultural chemicals more efficiently, thus preventing these chemicals from entering and polluting the waterways.

- (14) Comment: "The statement implies that the 87 miles of channelization will be limited to improving the old existing ditch system. This assumption is misleading and a more accurate discussion of the channelization as it relates to improving existing and building new ditch systems is warranted."

Response: The revised project, which reflects the deletion of the Pusey Branch bypass and Prong 3, consists of 32.4 miles of channel work. Approximately 81.4 miles of this channel work will consist of the enlargement of previously modified channels constructed during the period 1910 to 1955. The history of this original ditch system is discussed in the Environmental Setting section, page 4. One mile of the proposed work will be the new channel constructed on Prong 1 to bypass the wooded swamp. A breakdown of channel work to be performed is contained in the Planned Project section, pages 18 and 19.

- (15) Comment: "The statement indicates that the total area of the wooded swamp affected by construction will be 110 acres. The 3⁴5 acres of woodland which would be cleared for channel construction, as stated in the work plan, is not mentioned."

Response: The revised project, after the deletion of the Pusey Branch by-pass and Prong 3, will require the clearing of 320 acres of woodland. The clearing of this woodland and its environmental impact is discussed in the Environmental Impact section, pages 26 and 27, and is recognized as an Adverse Environmental Effect, page 31.

(16) Comment: "It is stated that 'all spoil in the woodlands will be continuous and sloped away from the channel. Controlled inlets will manage water runoff and preserve any small wetlands that may be present.' There is no discussion of how these same inlets may be used to drain wetlands as is frequently the case. Drainage, while not a direct project function, will be encouraged by the higher level of flood protection offered by the project. Further discussion of the beneficial and adverse effects of drainage on the post project environmental setting is warranted."

Response: The shaping of spoil in woodland will prevent overbank flow into the ditch and will allow surface runoff to enter the ditches through controlled inlets thus preventing erosion damage to the ditch bank. This will impede surface drainage into the improved channel and will create pockets of standing water on a temporary basis, but will not necessarily create new wetlands. In theory, landowners could use the controlled inlets to drain additional woodlands but past experience has shown this has not been done. In the five watersheds in Worcester County where projects have been completed for periods ranging from 4 to 10 years, less than 1 percent of the land has been cleared for crops.

(17) Comment: "The statement should reflect consultation with the National Register of Historic Places and the State Liaison Officer for Historic Preservation (Director, Maryland Historic Trust, Box 1704, Annapolis, Maryland 21401) for information on whether project lands may be listed or be nominated to the National Register.

The statement should discuss the actions taken or being proposed to determine whether archeological resources are present in the project area. The finding, recommendations and the proposed actions, obtained from a professional archeological survey should be discussed in the appraisal of the impacts on cultural environmental values."

Response: This was overlooked in the draft statement and is now discussed in the Environmental Setting section, page 9, and in the Planned Project section, page 20. The National Register of Historic Places lists no place of historic value that will be affected by the installation of the proposed project. In his letter of April 9, 1970, the State Liaison Officer, Division of Federal, State and Private Agency Assistance, National Park Service, United States Department of the Interior, indicated that

his staff had found no historical or archeological values that would be affected by this project. Should items of archeological value be found during construction activities, the site of such finding shall be preserved until proper investigation can be made by the Maryland State Archeologist.

- (18) Comment: "The statement indicates that 30 acres of swamp will be partially drained, thereby converting a woody swamp to a bottom land hardwood site. While this action does reduce those land areas susceptible to insect breeding, it also impacts adversely on those wildlife species which require a swamp habitat. The full range of impacts that occur as a result of draining wetlands should be identified."

Response: The project, as now planned, will affect 34 acres of wooded swamp along the constructed right-of-ways at the lower end of the Dividing Creek Main channel. The effects of the changed outlet conditions on this area have been discussed in the Environmental Impact section, pages 22 and 23.

- (19) Comment: "We request that you enclose the Bureau of Sport Fisheries and Wildlife reports of August 10, 1970, and September 2, 1971 (copies enclosed) with the work plan when it is submitted to Congress."

Response: Concur. These reports have been attached and are found following the Department of the Interior's letter of comment in Appendix B.

Maryland Department of State Planning (State Clearing House)

- (1) Comment: "The statement should address the fact that Dividing Creek is a portion of the Scenic Rivers System in Maryland and assess this aspect of the impact of the project."

Response: This comment is similar to Comment (1) of the Department of the Army. The final Environmental Statement has been revised to recognize that the Pocomoke River, including the tributaries, has been designated as a Scenic River. The impact of the proposed project will be temporary in nature due to construction activities in the upper portions of Dividing Creek and its tributaries. The project's impact on the scenic aspects of the watershed are discussed in the Environmental Impact section, pages 27 and 28.

- (2) Comment: "Since the Statement indicates inadequate drainage as the reason for losses in agribusiness, the question of soil suitability for higher value crops should be addressed to determine whether or not the soil will support such crops when the drainage project is completed."

Response: In response to Comment (1) of the Environmental Protection Agency, it was pointed out that recent studies predict a decline in truck crop production in the four lower Eastern Shore Counties. It is now expected that any shift to truck crop operations in the watershed will be limited. The revised Environmental Statement includes a description of the major soil associations found in the watershed in the Environmental Setting section, pages 2 and 3. Most of these soils require drainage practices to achieve good crop yields. According to the Soil Surveys published for Wicomico, Worcester, and Somerset Counties, these soils when properly drained and managed can produce increased crop yields.

- (3) Comment: "The statement should consider flood controls as well as land enhancement."

Response: Flood prevention, as well as drainage, is a primary purpose of the planned project. Because of the inadequate drainageways in the upland portion of the watershed, storm water inundates large areas of flat land and results in heavy crop damages. The channel system will insure adequate flood protection from all but the larger, more infrequent storm events.

- (4) Comment: "The alternative of pumping water off of private farms into community outlets should be discussed."

Response: Pumps may be used for disposal of excess water from drainage systems; but, because of the high costs and more stringent requirements for operation and maintenance, they are generally used only where discharge by gravity flow cannot be obtained. Pump drainage systems are commonly installed to lift drainage water over dikes or barriers which prevent backwater or tidal flooding.

The installation of the proposed Dividing Creek project will provide "community outlets" for all agricultural land in the watershed. This will permit on-farm drainage by gravity methods such as drainage mains and laterals or tile systems. The adverse environmental impact associated with the project is due to the construction of the community outlet system and would not be reduced by on-farm pumping.

9. LIST OF APPENDIXES

Appendix A - Comparison of Benefits and Costs for Structural Measures

Appendix B - Letters of Comment Received on the Draft Environmental Statement

Appendix C - Waterway Construction Permit and Correspondence

Appendix D - Land Use Map

Appendix E - Stream Classification Map

Appendix F - Wooded Swamp Location

Appendix G - Project Map

APPROVED BY

Norman J. B.
Acting Kenneth E. Grant
Administrator

DATE DEC 21 1973

COMPARISON OF BENEFITS AND COSTS FOR STRUCTURAL MEASURES

Dividing Creek Watershed, Maryland
(Dollars)

Evaluation Unit	Damage Reduction	Average Annual Benefits ^{1/}					Average ^{2/} Annual Cost	Benefit Cost Ratio
		More Intensive Land Use	Change Land Use	Drainage	Local Secondary	Total		
Upper Dividing	10,772	31,284	2,049	33,333	12,893	90,331	30,910	2.9:1.0
Pusey Branch	3,926	13,037	539	13,576	5,059	36,137	28,871	1.3:1.0
Pollitts Branch	1,623	4,831	305	5,136	1,965	13,860	9,737	1.4:1.0
Lower Worcester								
Prong #1	4,222	12,227	684	12,911	4,912	34,956	4,508	7.8:1.0
Prong #2	973	6,009	6,009	1,729	1,729	14,720	2,868	5.1:1.0
Lower Somerset								
Tonys Branch	2,105	6,081	449	6,530	2,555	17,720	5,391	3.3:1.0
Dublin Branch	2,773	6,053	500	6,553	2,841	18,720	6,594	2.8:1.0
Costen Branch	1,496	4,332	333	4,665	1,828	12,654	4,710	2.7:1.0
Cokesbury Branch	1,074	2,558	652	3,210	1,292	8,786	5,494	1.6:1.0
Project Administration							18,459	
GRAND TOTAL	28,964	86,412	5,511	91,923	35,074	247,884	117,542	2.1:1.0

1/ Price Base - Adjusted Normalized.

2/ 1973 Costs

NOTE: This table reflects the use of an Interest Rate of 6 7/8 percent.

December 1973



STATE OF MARYLAND
EXECUTIVE DEPARTMENT
ANNAPOLIS, MARYLAND 21404

MARVIN MANDEL
GOVERNOR

December 7, 1972

Mr. Kenneth E. Grant
Administrator
Soil Conservation Service
U. S. Department of Agriculture
Washington, D. C. 20250

Dear Mr. Grant:

The provisions of the original Dividing Creek Watershed Work Plan were reviewed, and presented in public hearing by the Maryland Department of Natural Resources. Subsequent to the public hearing, project modifications were required which provide for greater control of channel location, design and construction, in order to protect non-tidal wetland areas and to conform with the spirit of the Maryland Scenic Rivers Law. These changes were sufficient to require modification of the Watershed Work Plan.

The revised Watershed Work Plan, dated September, 1972, has been critically reviewed. I concur with the revised Dividing Creek Watershed Work Plan subject to the conditions that (1) the final environment impact statement reflects current project provisions, and (2) the project is implemented in accordance with the State Waterway Construction Permit.

Sincerely,

A handwritten signature in black ink that reads "Marvin Mandel".

Governor



DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
WASHINGTON, D.C. 20201

OFFICE OF THE SECRETARY

JAN 10 1972

Mr. Kenneth E. Grant
Administrator
Soil Conservation Service
U.S. Department of Agriculture
Washington, D.C. 20250

SOIL CONSERVATION SVC.
WASH., D.C.

Dear Mr. Grant:

This is in response to your letter of August 12, 1971, to Secretary Richardson wherein you request comments on the Watershed Work Plan and draft environmental impact statement for the Dividing Creek Watershed in Wicomico, Worcester and Somerset Counties, Maryland.

This Department has reviewed the health aspects of the subject project. We offer no comments.

The opportunity to comment on the Watershed Work Plan and draft environmental impact statement is appreciated.

Sincerely yours,

Merlin K. DuVal, M.D.
Assistant Secretary for
Health and Scientific Affairs



DEPARTMENT OF THE ARMY
WASHINGTON, D.C. 20310

30 SEP 1971

Honorable Thomas K. Cowden
Assistant Secretary of Agriculture
Washington, D. C. 20250

Dear Dr. Cowden:

In compliance with the provisions of Section 5 of Public Law 566, 83d Congress, the Administrator of the Soil Conservation Service, by letter of 12 August 1971, requested the views of the Secretary of the Army on the work plan for Dividing Creek Watershed, Wicomico, Worcester, and Somerset Counties, Maryland.

Insofar as structural measures are concerned, we foresee no conflict with any projects or current proposals of this Department.

It is suggested that the draft environmental statement include a reference to the Maryland Code (Sec. 763 of Article 66C) which designates the Pocomoke River, including Dividing Creek, as a Scenic River. Both the Pocomoke River and Dividing Creek are composed of unique natural areas with cypress swamps and wetlands which make the area a sanctuary for aquatic life as well as other wildlife. The endangered Bryant Fox Squirrel is reported to be in this area by the Maryland Scenic Review Board.

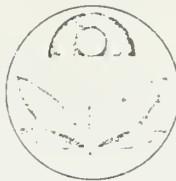
Sincerely,

Charles L. Ford
for Kenneth E. BeLieu
Under Secretary of the Army

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CONSERVATION SVC.
WASH., D.C.

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U.S. ENVIRONMENTAL PROTECTION AGENCY

REGION III

12/12/71

6th & Walnut Sts., Philadelphia, Pennsylvania 19106

CC: CC: [unclear] January 10, 1972
WASH. D.C.

Mr. Kenneth E. Grant
Administrator
United States Department of Agriculture
Soil Conservation Service
Washington, D. C. 20250

Dear Mr. Grant:

This is in response to your letter of August 12, 1971, enclosing a draft environmental impact statement and Watershed Work Plan to Mr. William D. Ruckelshaus in connection with planned conservation land treatment measures and approximately 87 miles of channel improvement for Dividing Creek Watershed, located in Wicomico, Worcester and Somerset Counties, Maryland.

The final statement should include a location map which delineates the proposed project features. In addition, the final statement should indicate maps detailing present land uses and possible changes in land use patterns resulting from the implementation of the project, including any new lands to be brought into agricultural production.

We are concerned with potential water quality deterioration resulting from soil erosion and land drainage containing significant quantities of fertilizer and pesticide runoff. The possible adverse environmental effects of more efficient drainage on water quality should be considered for lands that will continue to produce field crops and for lands that will be converted to truck crop production.

The project requires drainage or clearing of 110 acres of wetlands. The total environmental impact of this action on the existing flood plain should be discussed in the final impact statement. For example, the effect of speeding surface runoff of rainwater that falls on the Dividing Creek Watershed on the downstream tidal regime (which is utilized by anadromous marine life) should be determined. This information, along with data on any anticipated changes in downstream flooding frequencies resulting from efficient channelization structures, should be included in the final impact statement.

We hope that our comments will be useful in the preparation of the final impact statement for this project. Thank you for the opportunity to comment. We would appreciate receiving a copy of the final statement for our files and future reference.

Sincerely yours,



Robert J. Blanco, P. E.
Environmental Impact Section



THE ASSISTANT SECRETARY OF COMMERCE
Washington, D.C. 20230

April 17, 1972

Dr. T. C. Byerly
Office of the Secretary
U.S. Department of Agriculture
Washington, D. C. 20250

Dear Dr. Byerly:

The draft environmental statement for the "Dividing Creek Watershed in Maryland," which accompanied your letter of February 11, 1972, has been received by the Department of Commerce for review and comment.

The Department of Commerce has reviewed the draft environmental statement and has the following comments to offer for your consideration.

The statement does not consider the relationship between the proposed project channel alternations and the brackish waters of Dividing Creek, Pocomoke River, and Pocomoke Sound.

We suggest that the statement might be strengthened by addressing conditions and problems that may result from an increase in stream flows and agricultural land drainage. In our judgement, the reduction of water salinity, the increase in sediment load, and the leaching of fertilizers and pesticides could adversely affect the aquatic environment and the commercial and sport fisheries of the project area.

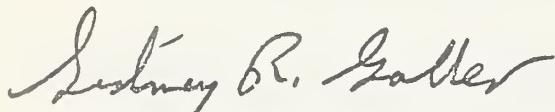
Studies that have examined the effect of reduced salinity, increased stream sediment loads, and leaching of fertilizers on estuarine organisms could profitably be reviewed and discussed in the statement. The aforementioned conditions are

well documented in current scientific literature 1/2/3/. An analysis of results obtained in other areas, as reported in these and other studies, could provide a basis for discussing probable environmental impact and potential adverse effects of the proposed Dividing Creek Watershed Project.

For instance, Calabrese and Davis 4/ found that a reduction of salinity below 22 ppt prevented development of hard clam embryos. In 1970, the National Marine Fisheries Service fish landing data for the Pocomoke River and Sound recorded a harvest of 26,000 pounds of hard clams. This present hard clam fishery could be adversely affected by a future reduction in salinity brought about by an increase in stream flow.

We hope these comments will be of assistance to you in the preparation of the final statement.

Sincerely,



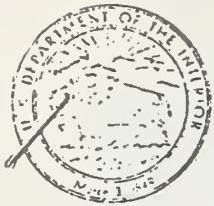
Sidney R. Galler
Deputy Assistant Secretary
for Environmental Affairs

1/ Postma, H., 1967, Sediment transport and sedimentation on estuarine environment, pp. 158-179 in: *Estuaries*, edited by G. H. Lauff; Publication No. 83, American Association for the Advancement of Sciences, Washington, D. C.

2/ Mansueti, R. J., 1964, Eggs, larvae and young of the white perch, *Roccus americanus*, with comments on the ecology of an estuary. *Chesapeake Science*, 5 (1-2): 3-45.

3/ Odum, H. T., 1969, "Coastal Ecological Systems of the United States" University of North Carolina, Chapel Hill, 1878 pp.

4/ Calabrese, A. and H. C. Davis, 1970, Tolerances and requirements of embryos and larvae of bivalve molluscs. *Helgoland wiss Meeresunters*, 20: (1-4): 553-564.



United States Department of the Interior

DEPARTMENT OF THE
INTERIOR
OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20240

AMERICAN RIVER COUNCIL
1000 K ST., N.W.
SUITE 2300
WASHINGTON, D.C. 20004

JAN 17 1972

Dear Mr. Secretary:

We have reviewed the work plan and the environmental statement for the Dividing Creek Watershed, Maryland, which was furnished us by Soil Conservation Service letter of August 12, 1971. The following comments are furnished for your consideration and use.

The Dividing Creek Watershed was evaluated in a Bureau of Sport Fisheries and Wildlife report of August 10, 1970. It was further reviewed under the guidelines of SCS Watershed Memorandum 108 and reported under the date of September 2, 1971. Considering both these reviews which were endorsed by the Maryland Fish and Wildlife Administration and recognition by the Maryland Legislature in the State Scenic Rivers Act of 1971 regarding the wild and scenic nature of the Pocomoke River and all its tributaries (Dividing Creek is one of the tributaries), a further review of this watershed work plan has been made and our comments are as follows.

The project as presently designed involves 87 miles of stream channelization, bypass channels around wooded areas and desilting basins at the terminal points of channelization on the main streams. The proposed construction is expected to have a significant detrimental effect on fish and wildlife resources and their habitat.

Sunfish, pickerel and other resident fish are not in abundance in the project area and the fishery value for these species is generally low. Yellow perch, herring and other anadromous fish species use the lower reach of Dividing Creek for spawning. Wildlife resources include deer, quail, rabbits, squirrel, fox and raccoon in abundance. Several species of waterfowl and fur animals use the wooded swamp areas. This watershed also provides habitat for two rare and endangered species; the Delmarva Bryant's fox squirrel and the bald eagle. In addition, the Cypress swamps in this watershed are unique to this portion of Maryland.

The streams in the southwestern section of the watershed, Cokesburg Branch, Costen Branch, Dublin Branch and Tonys Branch are relatively small, intermittent streams which have been previously channelized. These streams, along with Prong 2 and Prong 3, are

not associated with any significant wetlands and have the lowest fishery value of any streams in the watershed. Channelization of these streams will have minor adverse effects on the fishery resources of the immediate area.

Pollitts Branch has areas which are intermediate zones between wooded swamp and bottom land hardwoods. Limited adverse effects would result to the sport fishery in the immediate area from channelization of this stream, particularly if the work is performed from the side of the stream with the least amount of vegetation and stopped prior to its confluence with the main stem of Dividing Creek.

Of particular concern to this Department is the channelization of Pusey Branch and Prong 1 as the work in these areas will affect wooded swamp, the most significant and productive wetlands in the watershed. The wooded swamp constitutes eight percent of the wooded habitat in the project area and it provides the only significant break in the pine and pine hardwood forest. In addition to providing escape, food and nesting cover for mammals, birds, reptiles and amphibians, the wooded swamps also function as a natural sedimentation trap and assimilative area which protects downstream areas from more rapid eutrophication.

Flood waters, upon which the existence of these swamps depend, would be routed around the swamps via bypass channels. These bypass channels also would trap surface runoff flowing into the swamps from upland areas which further reduces the supply of water to the swamps. It is estimated that approximately 20 percent of the hardwood swamp habitat would be adversely affected by project construction. Construction of the bypass channels would also affect the salinity regimen in the lower reaches of Dividing Creek due to hydrological changes. This, in turn, could have an adverse effect on anadromous fish using the stream for spawning.

Sediment trap construction downstream from the bypass channels would destroy wooded swamp which acts as natural sediment traps. Without the upstream, off-channel ditching, these traps would not be necessary and the additional wetland destruction could be avoided. Further, unless the sediment is removed from the traps periodically the channel improvement benefits will gradually be lost. The work plan should specify the frequency of maintenance and who is to do the maintenance.

A loss of 412 acres of woodland habitat is involved in the channel rights-of-way. The report claims that seeding of the spoil banks would create more new habitat for open land wildlife

than would be lost by removing brushy growth in the cropland area. This would not be a creation of new habitat but a tradeoff of limited, high quality bottom land forest habitat for deer, turkey, squirrel, the Delmarva Bryant's fox squirrel and the bald eagle for an open land habitat which is already in abundant supply. We also believe the beneficial effects to ground nesting birds which will occur as a result of reduced flooding is somewhat hypothetical.

The destruction of habitat by excavation, the drainage of swamps and other flood plain areas, increased sedimentation and siltation and changes in the hydrologic pattern of the waterway as well as increased nutrient and pesticides expected from land use changes are the major adverse environmental impacts that will occur if the present flood control plan for the watershed is implemented. In view of these impacts, the Department of the Interior must oppose this watershed work plan. We recommend that the work plan be returned to the State Conservationist for reevaluation and revision. The purpose of revising the work plan is to eliminate or significantly reduce the adverse environmental effects described above. We also recommend that any subsequent studies for this work plan be undertaken with the close coordination with the Maryland Fish and Wildlife Administration and our Bureau of Sport Fisheries and Wildlife. We also suggest that subsequent studies consider the requirements of Section 11 of the Estuary Protection Act (PL 90-454) regarding non-degradation of estuary. A discussion of the project impact on the estuary should be set forth in this report. During the course of any followup studies we further recommend that serious consideration be given to the substitutes of a flood plain levee system as illustrated on the attached sketch for the proposed channelization. The restudy should also provide the rationalization that was utilized to accept or reject this alternative.

The environmental impact statement appears to be largely a repetition of the data set forth in the watershed work plan and therefore oriented more toward project justification rather than an unbiased assessment of the environmental impacts of the proposed action. We believe the statement to be inadequate and recommend that it be rewritten to report in a more objective fashion the environmental effects of the project. We assume that the revised statement will also reflect the environmental effects that will occur should the work plan be revised by the State Conservationist. The following comments will point out those aspects of the statement which we believe to be inadequate.

The major shortcoming of this statement is not recognizing that Dividing Creek, its tributaries, the Pocomoke River and the estuary are segments of an integrated ecosystem. An action in one part of the system will yield a reaction in another part of the system. This is best illustrated in the discussion of the 87 miles of channelization of tributary streams with settling basins whereby no recognition is given to the environmental effects of turbidity, nutrients, pesticides, and hydrologic changes in the downstream segment of the system.

Environmental Setting - This section indicates that the project will stimulate more truck farming in the area. The statement should contain a discussion of the environmental effects of increased sediment runoff, pesticides and nutrients entering the waterways as a result of this land use change.

The section discusses the hardwood swamp areas within the watershed. However, there is no discussion of the Cypress swamp, a type unique to Maryland and what, if any, impacts this project may have on the Cypress swamp. There should also be a discussion of the rare and endangered species in the project area and what effects, if any, the project will have on these species or their habitat.

The effect of project-related reduction of flooding on the ground-nesting birds is somewhat overemphasized. The discussion on the fishery resources and the environmental effects of the project on those resources is incomplete. The statement implies that the 87 miles of channelization will be limited to improving the old existing ditch system. This assumption is misleading and a more accurate discussion of the channelization as it relates to improving existing and building new ditch systems is warranted.

The statement indicates that the total area of the wooded swamp affected by construction will be 110 acres. The 345 acres of woodland which would be cleared for channel construction, as stated in the work plan, is not mentioned. There is no discussion of the habitat changes in the swamp as a result of the bypass channels in Prong 1 and Pusey Branch, nor any discussion of the hydrologic changes caused by the project and the impact of this change on the environment of the downstream swampland.

The section dealing with sediment traps states, "These sediment traps will function during the normal runoff seasons as swamp areas and will replace some of the swamp destroyed or drained by

channel construction." We do not believe these trap areas will make any significant contribution in replacing natural swamp areas lost through project construction.

It is stated that "all spoil in the woodlands will be continuous and sloped away from the channel. Controlled inlets will manage water runoff and preserve any small wetlands that may be present." There is no discussion of how these same inlets may be used to drain wetlands as is frequently the case. Drainage, while not a direct project function, will be encouraged by the higher level of flood protection offered by the project. Further discussion of the beneficial and adverse effects of drainage on the post project environmental setting is warranted.

The proposed work plan will not affect the mineral resources of the area nor will it impact on Indian lands under the jurisdiction of this Department. The proposal will not impact on areas of the National Park System that are existing or under study. The project does not contain any lands eligible for registration in the National Landmark program. However, the statement should reflect consultation with the National Register of Historic Places and the State Liaison Officer for Historic Preservation (Director, Maryland Historic Trust, Box 1704, Annapolis, Maryland 21401) for information on whether project lands may be listed or be nominated to the National Register.

The statement should discuss the actions taken or being proposed to determine whether archeological resources are present in the project area. The finding, recommendations and the proposed actions obtained from a professional archeological survey should be discussed in the appraisal of the impacts on cultural environmental values. The State Archeologist for Maryland is Mr. Tyler Bastian, Maryland Geological Survey, Johns Hopkins University, Baltimore, Maryland 21218.

Environmental Impacts - This section indicates that sloping the spoil away from the channel will create new swamp areas and these new swamp areas will tend to replace what is destroyed. Lands on the upland side of the spoil banks are controlled by private interests and the increased flood protection may prompt the owners to a land use change that will require more drainage of wetlands having value as a wildlife habitat. Lands on the channel side of the spoil bank must be kept free of woody vegetation in order to maintain the hydraulic capacity of the waterway. Accordingly, we find there is little basis for assuming any new swamp areas will be created by this project.

This section indicates that 30 acres of swamp will be partially drained, thereby converting a woody swamp to a bottom land hardwood site. While this action does reduce those land areas susceptible to insect breeding, it also impacts adversely on those wildlife species which require a swamp habitat. The full range of impacts that occur as a result of draining wetlands should be identified.

This section claims that the project will provide a better habitat for quail and other ground-nesting birds. It fails to mention that this beneficial effect is gained at the expense of 345 acres of unique hardwood habitat which provides cover for deer, turkey, and the rare and endangered species. Further, the hardwood habitat which would be lost by project construction is in much shorter supply than that for quail and other ground-nesting birds.

Alternatives to the Proposed Action - We believe this section to be inadequate. The section should be expanded to discuss flood plain zoning and land uses which are more compatible with temporary flooding than the existing or proposed agricultural use. We would also suggest that a system of flood plain levees be evaluated as a potential solution to the flood problem.

In view of the foregoing comments, we recommend that this environmental statement be returned to the State Conservationist for revision. The revised statement should include a full discussion of this project's impact on fish and wildlife and their habitat from drainage of wetlands, sedimentation, changed hydrologic pattern in Dividing Creek, as well as increased nutrient and pesticide loadings in these waters. The statement should also contain an appraisal of the project's impact on the Cypress swamps and the rare and endangered species of wildlife. The statement should also reflect those environmental impacts which would arise if the existing work plan is modified to lessen its impact on fish and wildlife.

We request that you enclose the Bureau of Sport Fisheries and Wildlife reports of August 10, 1970, and September 2, 1971 (copies enclosed) with the work plan when it is submitted to Congress.

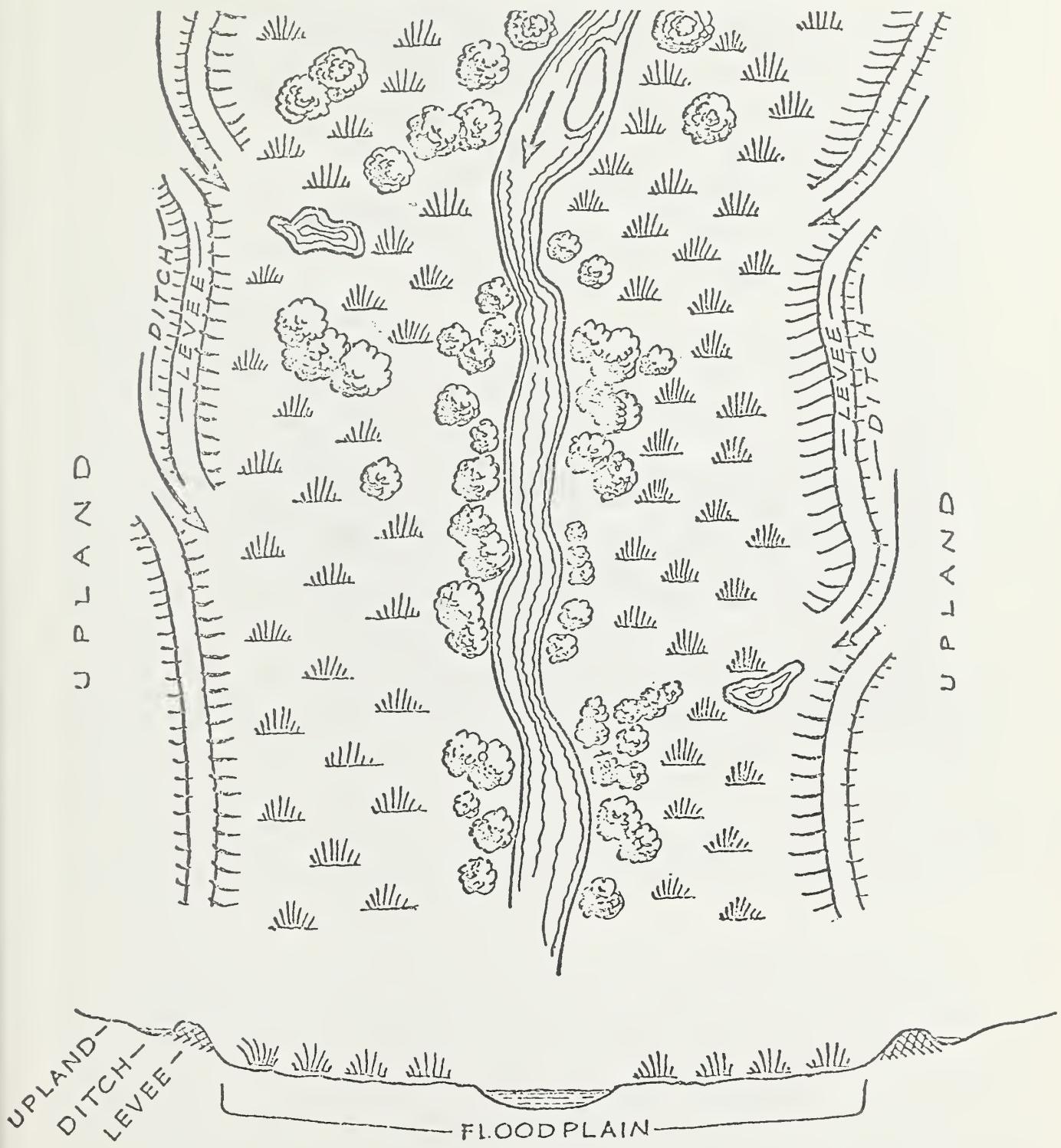
Sincerely yours,

Deputy Assistant Secretary of the Interior

Honorable Earl Butz
Secretary of Agriculture
Washington, D.C. 20250

. Enclosures

FLOODPLAIN-LEVEE SYSTEM



Floodplain management can be effected by levees and ditches designed to prevent back-flooding and provide a drainage system as part of the land treatment measures in upland agricultural areas without destroying the functions and related uses of the natural floodplain (e.g., temporary detention of flood waters, trapping of upland sediment and nutrients, retarding stream eutrophication, open space, natural beauty, etc.). This avoids channelization which is so destructive of natural stream and riverine fish, wildlife, and other values.

The ditches can be designed with sufficient gradient to divert upland runoff and release the water into the floodplain through designed gaps in the levees. The small levees constructed adjacent to the floodplain prevent floodplain overflow from back-flooding onto the agriculture lands. That water which back-flows through the openings can be picked up by the next downstream ditch. The floodplain area can provide agricultural use compatible with temporary flooding (unimproved pasture, forest, etc.) as well as serve the above mentioned purposes including improved fish and wildlife habitat. Ditch outlets can be designed with or without settling basins depending on local soil conditions and need for water holding areas. Permanent buildings, if any, located in the floodway must be flood proofed.

UNITED STATES DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
BUREAU OF SPORT FISHERIES AND WILDLIFE
PEACHTREE-SEVENTH BUILDING
ATLANTA, GEORGIA 30323

August 10, 1970

SCS-Md. (Dividing Creek)

Mr. Douglas Hole
State Conservationist, Soil
Conservation Service
College Park, Maryland

Dear Mr. Hole:

The Bureau of Sport Fisheries and Wildlife, in cooperation with the Maryland Fish and Wildlife Administration, has reviewed your proposed plan for Dividing Creek Watershed, Worcester, Somerset, and Wicomico Counties, Maryland, to determine possible effects on fish and wildlife resources. These comments are provided in accordance with the provisions of Section 12 of the Watershed Protection and Flood Prevention Act (68 Stat. 666, as amended; 16 U.S.C. 1008).

Based on data furnished by your office, we understand the proposed project consists of approximately 87 miles of channel excavation along Dividing Creek, Pusey and Pollitts Branches, and their tributaries. Sediment basin will be constructed at the lower end of project construction on the main stem and each major tributary to collect sediment during construction. Spoil banks will be seeded and no channel construction, except for clearing, will be done during the period March 15 through June 15 unless concurrence is obtained from the Maryland Department of Natural Resources. The major problems to be alleviated through this project are poor drainage and seasonal flooding of agricultural lands.

Dividing Creek rises in the Coastal Plain south of Salisbury, Maryland, at an elevation of approximately 60 feet above mean sea level and flows in a southerly direction to join the Pocomoke River about 2 miles northeast of Pocomoke City, Maryland. The watershed area is approximately 41,500 acres. Present land use consists of 17 percent cropland, 82 percent woodland, and 1 percent in other uses. Of the total watershed woodland, loblolly pine comprises 65 percent; bottom-land hardwoods, 12 percent; wooded swamp, 8 percent; and mixed oak-pine, the remaining 15 percent. Oaks, gums, red maples, birches, deciduous vines, and shrubs grow along most of the branches, with cypress trees occurring in wooded swamps along the lower portions of the major tributaries and Dividing Creek. Part of the 4,350-acre Pocomoke State Forest is located within the watershed.

The stream segments to be affected are small, slow moving bodies of water that are normally quite shallow. Most of the tributaries are intermittent, lacking any defined channel, and are classified as dace trickle streams. The lower portions of the main stem and the three main tributaries to be channelized are sucker type streams. Stream fishery resources in the area to be channelized are of low value and fisherman use is negligible. Although streams in the project area are not presently utilized by anadromous fish, herring concentrate in lower portions of the main stem during the spring spawning run.

Wildlife resources of the watershed are abundant and support moderate hunting pressures. Deer, rabbit, quail, squirrel, raccoon, and fox furnish most of the hunting opportunity. The area's wooded swamps provide excellent habitat for wood ducks, woodcock, and fur bearers, and refuge areas for deer and other wildlife species. Migrant mallards and black ducks also make seasonal use of the streams and swamps.

Fishery value of the project streams is low. Therefore, channelization is not expected to have significant detrimental effects on this resource in the immediate area. The sediment traps at the lower terminus of project works and the seeding of spoil banks are expected to minimize sedimentation in lower portions of the main stem during and after project construction. To prevent damage to anadromous fish, no channel construction work, except for clearing, is to be done during the period March 15 through June 15. Increase in streambank erosion and loss of ponding areas where mud normally settles out during high water stages will increase downstream turbidity.

Construction of the project as depicted in the draft plan, would destroy 345 acres of woodland for channel right-of-way. Clearing of brushy cover along the 70 acres of right-of-way through cropland will also cause habitat losses. Wildlife losses will occur from removal of den trees, clearing, and loss of the refuge areas in wooded bottom lands following accelerated drainage. About 350 acres of wooded swamps on the lower segments of project streams will be destroyed or drained as a result of project construction. One hundred acres of swamp along Pusey Branch, 44 acres along Pollitts Branch, 56 acres along Prong Number 1, and 150 acres along the main stem of Upper Dividing Creek will be affected (see plate). These swamps vary from 200 to 600 feet wide, and it is expected that the portions not cleared for right-of-way will be drained by the channels and lowering of the water table. The affected wooded swamps comprise over 10 percent of the total swampland in the watershed. The drained swamps will be converted to upland habitat which already is abundant. Drainage of these wetlands will result in loss of excellent waterfowl and woodcock habitat. The refuge quality that the swamp provides for deer and other wildlife species will also be lost.

We understand that the draft work plan is to be modified in accordance with alternatives developed by representatives of the Maryland Department of Natural Resources and the Soil Conservation Service. The modifications are being considered because of the value of these wetlands to wildlife and their increasing scarcity. Modifications on Pusey Branch would involve moving the channel to the west side of the wetland area and providing for diversion of low flows through the leveed wetlands adjacent to the east side of the channel. The Maryland Department of Natural Resources and the

Soil Conservation Service agreed that the draft work plan provision for holding the constructed channel to the right bank section of the wetland on Follitts Branch would provide protection for this area. A similar reallocation of the channels on Frong 1 Unit II was worked out to protect associated wetlands. Channelization on the main stem would be modified also so that the proposed work would start approximately 2 miles above the Denton Road crossing (see plate).

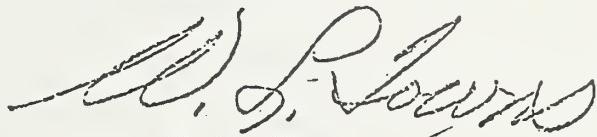
We understand that the proposed modifications have the approval of the local watershed steering committee, the Maryland Department of Natural Resources, and the Soil Conservation Service.

If these modifications are included in final project work plans, it is the opinion of the Bureau that damages to fish and wildlife resulting from project construction and operation will be greatly reduced. However, even with these considerations, net effects of the project will be to reduce fish and wildlife resources in the project area.

This report has been reviewed and concurred in by the Maryland Fish and Wildlife Administration, and a copy of Director Manning's letter is attached.

We appreciate the opportunity to comment on project plans and we request that you advise us in the event there are other project changes.

Sincerely yours,



W. L. Towns
Acting Regional Director

Attachment

STATE OF MARYLAND
FISH AND WILDLIFE ADMINISTRATION

JOSEPH H. MANNING
DIRECTOR

STATE OFFICE BUILDING
ANNAPOLIS 21401
AREA 301 268-3371

July 23, 1970

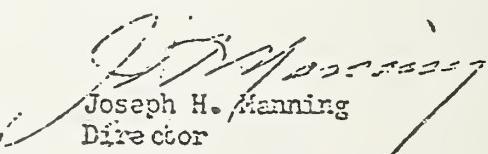
Mr. W. L. Towns
Deputy Regional Director
U.S. Dept. of the Interior
Fish and Wildlife Service
Bureau of Sport Fisheries and Wildlife
Peachtree-Seventh Building
Atlanta, Georgia 30323

Dear Mr. Towns:

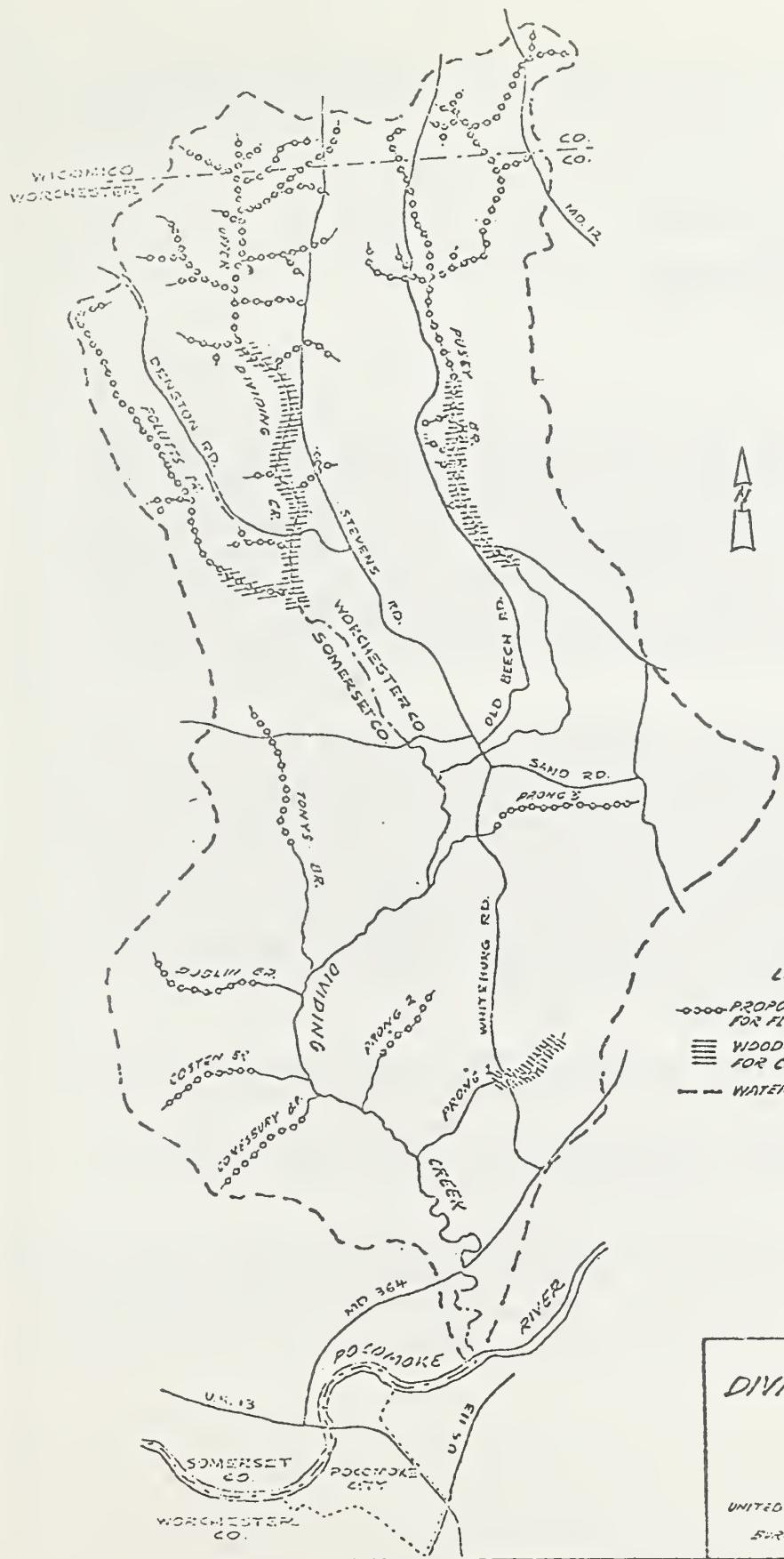
This is in reply to your letter of July 13th regarding the proposed revised letter report to the Maryland State Conservationist, on Dividing Creek PL566 Watershed Project.

We generally concur with your comments concerning the above project. We should like to point out, however, that as of July 1, 1970 our official name was changed to "Maryland Fish and Wildlife Administration". Any reference in your letter to Maryland Department of Game and Inland Fish should be replaced by our official title.

Sincerely yours,


Joseph H. Manning
Director

JHM:LSR:fs



LEGEND

- Proposed channel improvement for flood prevention and drainage
- Wooded swamp proposed for chanclization
- Watershed boundary

DIVIDING CREEK WATERSHED
MARYLAND

0 2 2 MILES

UNITED STATES DEPARTMENT OF THE INTERIOR
FISHERIES AND WILDLIFE SERVICE
BUREAU OF SPORT FISHERIES AND WILDLIFE

September 2, 1971

Mr. C. Douglas Hole
State Conservationist, Soil
Conservation Service
4321 Hartwick Road, Room 522
College Park, Maryland 20740

Dear Mr. Hole:

The Fish and Wildlife Service has completed a new field review of the Dividing Creek Watershed in Wicomico, Worcester, and Somerset Counties, Maryland, project. This work plan has been placed in Group I (minor or no known adverse effects on the environment) under the guidelines of your Watershed Memorandum 108. We and the Maryland Fish and Wildlife Administration were informed of this group assignment on June 4, 1971, at your meeting in College Park, Maryland. The following Service comments are submitted as outlined at that meeting.

Dividing Creek is located just south of Salisbury, Maryland, in the Coastal Plain with headwater originating in southern Wicomico County and northern Worcester County. Pine and pine-hardwood forests are the dominant vegetation in the watershed with narrow bands of wooded swamp along the major streams. Cropland and other mixed vegetation comprise the remaining percentage of the project area. There are approximately 87 miles of channelization proposed in the project, some of which will affect these wooded swamplands. Drediting basins at the terminal points of channelization on the main streams are also a part of the project.

Throughout the project area, the wildlife resources are abundant. Concentrations of deer, quail, rabbit, and squirrel are high, with raccoon and fox also in the area. Wood ducks, migrant mallards, black ducks, woodcocks, fur animals, and various amphibians and reptiles depend upon the wooded swamp.

The streams in the southwestern section of the watershed, which include Cokesbury Branch, Cocton Branch, Dublin Branch, and Tonys Branch, are relatively small, intermittent streams which have been channelized in the past. These, along with Prong 2 and Prong 3, are associated with

no significant wetlands and have the lowest fishery value of any streams within the watershed. Only minor adverse effects would be levied upon the environment if the proposed channelization is carried out on these streams. However, damage to Dividing Creek main stem could occur from increased sediment and siltation as a result of tributary stream channelization. This damage can be reduced if the channelization is terminated as planned and at a sufficient distance upstream from Dividing Creek to allow for a degree of desilting of the water before it is discharged into the main stream.

Pollitts Branch contains areas which are intermediate between either wooded swamp or bottom-land hardwood. Other areas along the stream are bordered by croplands and are already subjected to sediment damage. A dace-trickle type stream, Pollitts Branch often goes dry during periods of light precipitation. Only minor adverse effects would result from channelization on Pollitts Branch, particularly if the work is performed from the side of the stream with the least amount of vegetation and stopped prior to its confluence with the Dividing Creek main stem. This would allow silt and sediment to settle, lessening the damage to Dividing Creek. Clearing and snagging in the downstream area of Pollitts Branch instead of channelization would be more compatible with the aquatic ecosystem.

Channelization along Nusey Branch and Prong 1 will affect wooded swamp, the most significant and productive wetland area found anywhere in the watershed. This wooded swamp, comprising 8 percent of the total amount of woodland in the project, provides habitat or refuge for most of the game species found throughout the watershed and affords the only significant break in cover types of pine and pine-hardwood forest. These wooded swamps serve as permanent cover and/or food sources for the numerous mammals, amphibians, and reptiles of the area and as a seasonal nesting, resting, and feeding area for wood ducks, black ducks, and mallards. Wooded swamps also function as natural sediment traps and assimilative areas, thus protecting downstream areas from more rapid eutrophication.

The bypass channels and channelization into the swamp itself would result in the loss of these valuable wetlands. Not only would the channel bypass flood flows, which are critical to the existence of wooded swamps, but it would also act as a trap for surface runoff coming into the swamp from upland areas, thus leading to an even drier situation.

As proposed, downstream sediment traps will be constructed in additional areas of the wooded swamp in order to prevent siltation from the upstream off-channel ditching. Without the proposed ditching, the sediment traps will be unnecessary, and this additional wetland destruction can be avoided.

Based on evaluation of the resources involved and the effect of the drainage and destruction of the valuable wooded swamp on this ecosystem, the Service recommends the deletion of stream channelization and the bypass channel on Pusey Branch and Prong 1 to the extent necessary to eliminate the need for the sediment traps and to avoid the destruction of the narrow band of wooded swamps. We also request that this project be placed in Group III until these changes are made in the work plan.

We appreciate the opportunity to participate in this review and request that we be advised of the action you plan to take in this matter.

Sincerely yours,

C. Edward Carlson
Regional Director

cc:

Mr. John R. Capper, Deputy Director, Department of Chesapeake Bay Affairs, Annapolis, Maryland
Mr. Thomas Barlow, Natural Resources Defense Council, Washington, D.C.
Mr. Joseph H. Manning, Director, Dept. of Game and Inland Fish,
Annapolis, Maryland (2 copies)
DRBB, Raleigh, N.C.

RALEIGH:RLBird:dkw



MARYLAND
DEPARTMENT OF STATE PLANNING

MARVIN MANDEL
GOVERNOR

301 WEST PRESTON STREET
BALTIMORE, MARYLAND 21201
TELEPHONE: 301-383-2451

May 2, 1973

Appendix B

VLADIMIR A. WAHBE
SECRETARY OF STATE PLANNING
EDWIN L. POWELL, JR.
DEPUTY SECRETARY

Mr. Theodore H. Ifft
Soil Conservation Service
4321 Harwick Road
College Park, Maryland 20740

SUBJECT: ENVIRONMENTAL IMPACT STATEMENT REVIEW

Applicant: Soil Conservation Service

Project: Dividing Creek Watershed

State Clearinghouse Control Number: 73-2-63

State Clearinghouse Contact: Warren D. Hodges (383-2467)

Dear Mr. Ifft:

The State Clearinghouse has reviewed the above noted Environmental Impact Statement. In accordance with the procedures established by the Office of Management and Budget Circular A-95, the State Clearinghouse received comments (copies attached) from the following:

Wicomico County: advised that the environmental impact to the County is negligible.

Worcester County: concurred with the project.

Maryland Department of Agriculture: evidenced approval of the project.

Department of Natural Resources: advised that unresolved conflicts and positions taken by the Department and the U.S. Fish and Wildlife Service necessitated revisions to the Work Plan. The Department noted that this environmental statement does not reflect the changes in the Work Plan, and must be revised to comply with the permits of State administrative agencies and to be in conformance with the current Work Plan. The Department requested that a new draft environmental statement be prepared.

Our staff reviewed this environmental statement and made the following comments:

- The statement should address the fact that Dividing Creek is a portion of the Scenic Rivers System in Maryland and assess this aspect of the impact of the project.

- Since the statement indicates inadequate drainage as the reason for losses in agribusiness, the question of soil suitability for higher value crops should be addressed to determine whether or not the soil will support such crops when the drainage project is completed.
- The statement should consider flood controls as well as land enhancement.
- The alternative of pumping water off of private farms into community outlets should be discussed.

As a result of this review, it is recognized that this watershed project has merit. However, it is apparent that this environmental impact statement needs to be up-dated and expanded to enable State agencies to adequately evaluate the impact of this project in the context of State plans, programs, and objectives. Accordingly, we recommend that a revised draft statement be prepared and re-submitted to the State Clearinghouse for further State review.

Your cooperation in this matter will be appreciated.

Sincerely,



Vladimir Wahbe

Vladimir Wahbe

Enc.

cc: Phillip Sopar
Wicomico County Commissioners
Worcester County Commissioners
Somerset County Commissioners
Young D. Hance
Anthony Abar

Wicomico County, Maryland

P. O. BOX 870
SALISBURY, MARYLAND 21801

COUNCIL

LEWIS R. RILEY, PRESIDENT
PARSONSBURG, MD.

March 13, 1973

MATTHEW E. CREAMER
ADMINISTRATIVE DIRECTOR

DAVID H. CLARK
ATTORNEY

DAVID A. GRIER, VICE PRESIDENT
SALISBURY, MD.

WADE H. INSLEY, JR.
SALISBURY, MD.

ALBERT J. BAILEY
HEBRON, MD.

ROBERT M. LAWRENCE
SALISBURY, MD.

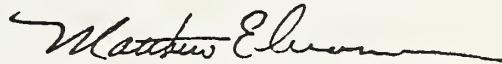
Mr. Warren D. Hodges
Chief, State Clearinghouse
Maryland Department of State Planning
301 West Preston Street
Baltimore, Maryland 21201

Dear Mr. Hodges:

Transmitted herewith is the statement sent by the Director of Public Works for Wicomico County regarding the Dividing Creek Watershed Project. Enclosed also, you will find a copy of the watershed area in Wicomico County.

Very truly yours,

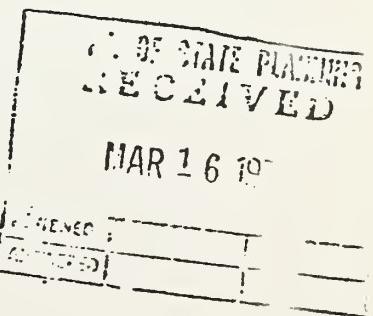
WICOMICO COUNTY, MARYLAND



Matthew E. Creamer
Administrative Director

MEC/cdl

enclosures (2)



MEMORANDUM

To: Matthew E. Creamer, Administrative Director
From: Delbert M. Davis, Jr., Director, Public Works
Subject: Dividing Creek Watershed
Date: March 9, 1973

Of the 41,900 acres of total watershed, only approximately 1200 acres are represented in Wicomico County. Therefore, environmental impact to our County is negligible. Of the total watershed, only about eighteen percent (18%) is considered crop land or pasture, the remaining acreage is in woodland.

The County will benefit in relation to drainage of county roads for the lower portions of St. Lukes Road, Coulbourne Mill and all of Nassawango Road will have better drainage. The State highway, Route #12, will have better drainage from Spearin Road south to the Worcester County line.

It is my thought that either Worcester or Somerset Counties should take the responsibility of furnishing the record keeping that Bob Harden's Finance office has done for the Passerdyke Watershed (located mostly in Somerset County) and the contracting officer, which I have done for the Passerdyke and Aydelotte Watersheds. There is considerable work involved in both of these jobs and it does not seem right that Wicomico should continue to take this burden.

I am enclosing a copy of the watershed area that exists in Wicomico County.

Delbert
Delbert

DMDjr/cjd

Enclosure.



OFFICE OF THE

County Commissioners

FOR WORCESTER COUNTY, MARYLAND

ROOM 127 COURT HOUSE

SNOW HILL MD. 21863

March 8, 1973

Mr. Warren D. Hodges, Chief
State Clearing House
Department of State Planning
301 West Preston Street
Baltimore, Maryland 21201

Dear Sir:

Re: Dividing Creek
Watershed
73-2-63

The County Commissioners of Worcester County have reviewed the Environmental Impact Statement on the above and concur. We would like to see this project move along as soon as possible.

Very truly yours,

Worcester County Commissioners

Ray Redden
President

RFR:w

MARVIN MANDEL
Governor

STATE OF MARYLAND

YOUNG D. HANCE
Secretary



JOHN T. CECI
Deputy Secretary

DEPARTMENT OF AGRICULTURE

Parole Plaza Office Building
ANNAPOLIS, MARYLAND 21401
301/267-1161

March 13, 1973

Honorable Vladimir Wahbe
Secretary
Department of State Planning
301 West Preston Street
Baltimore, Maryland 21201

Dear Val:

Reference is made to your letter of February 23rd concerning the Dividing Creek Watershed Project.

I have read this environmental impact statement with interest and I encourage your Department to assist us in getting this project underway.

Thank you for the information forwarded to me by Mr. Warren D. Hodges.

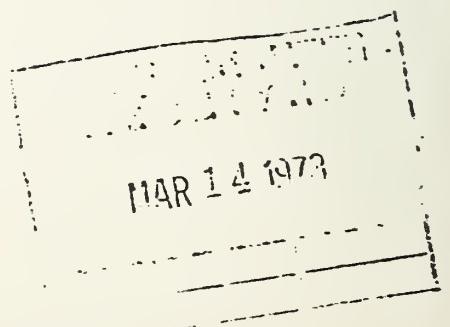
Sincerely,

A handwritten signature in black ink, appearing to read "Y.D." or "Young D. Hance".

Young D. Hance
Secretary

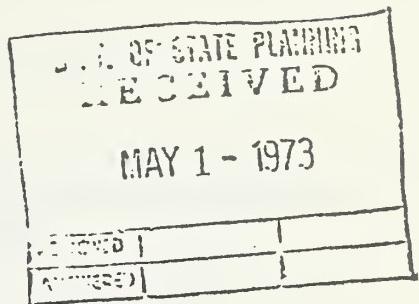
YDH:pb

cc: Mr. Warren D. Hodges



Date: April 30, 1973

Maryland Department of State Planning
State Office Building
301 West Preston Street
Baltimore, Maryland 21201



SUBJECT: PROJECT SUMMARY NOTIFICATION REVIEW

Applicant: Soil Conservation Service

Project: Dividing Creek Watershed

State Clearinghouse Control Number: 73-2-63

CHECK ONE

1. This agency does not have an interest in the above project. _____
2. The above project is consistent with this agency's plans or objectives and we recommend approval of the project. _____
3. This agency has further interest in and/or questions concerning the above project and wishes to confer with the applicant. _____
Our interest or questions are shown on enclosed attachment.
4. This agency does not believe a conference is necessary, but wishes to make favorable or qualifying comments shown on enclosed attachment. XXX

Signature Christopher J. Miller
Title Chief, Planning & Evaluation
Agency Dept. of Natural Resources



JAMES B. COULTER
SECRETARY

JOSEPH H. MANNING
DEPUTY SECRETARY

STATE OF MARYLAND
DEPARTMENT OF NATURAL RESOURCES
TAWES STATE OFFICE BUILDING
ANNAPOLIS 21401

April 30, 1973

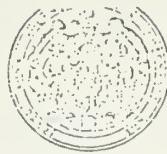
COMMENTS OF THE DEPARTMENT OF NATURAL RESOURCES ON PROJECT 73-2-63
Dividing Creek Watershed

This draft Environmental Impact Statement was submitted by the Applicant to the Council on Environmental Quality on July 15, 1971. The statement was distributed to Federal agencies and State agencies. As a result of numerous unresolved conflicts and positions taken by both the Department of Natural Resources and the U.S. Fish and Wildlife Service, project changes were made. A revised Work Plan was developed to satisfy unresolved conflicts and distributed in September, 1972. The revised Work Plan necessitated the writing of a new Environmental Impact Statement. Approval of the revised Work Plan by the Governor, on December 7, 1972, was contingent on a revised impact statement, as well as adherence to Water Resources permit conditions.

The Environmental Impact Statement submitted is outdated and contains many inaccuracies that need changing to comply with the permits of State administrative agencies, and to be in conformance with the Work Plan on this project, revised September, 1972.

The Department of Natural Resources requests that a new draft Environmental Impact Statement be prepared on this project to incorporate the concerns and remedies discussed with representatives of the Soil Conservation Service at various meetings between the time this statement was prepared in June, 1971 and the present.

The Department of Natural Resources is interested in this project and will continue to work with the Soil Conservation Service.



STATE OF MARYLAND
DEPARTMENT OF WATER RESOURCES
STATE OFFICE BUILDING
ANNAPOLIS, MARYLAND 21401

WATERWAY CONSTRUCTION PERMIT
NUMBER: WO-73-C-01

EFFECTIVE DATE OF PERMIT:
July 12, 1972

PERMIT FOR CONSTRUCTION IN A WATERWAY

In compliance with Article 96A, Annotated Code of Maryland, PERMISSION IS HEREBY GRANTED the Commissioners of Worcester, Wicomico, and Somerset Counties referred to as Applicant, to change the course current, and cross-section of Dividing Creek and tributaries as shown and described in the Work Plan for the Dividing Creek Watershed, prepared by the United States Department of Agriculture, Soil Conservation Service, dated September 1970.

This Permit is granted after hearing held on January 25, 1972 and is subject to the following conditions:

Permit Validation

1. This Permit is to be signed by the Applicant, if an individual, or by the officer authorized to enter into contracts for the Applicant. It shall then be returned to this Department for signature and shall become valid only after authentication by the Department. In accepting this Permit, the Applicant accepts the responsibility for carrying out its conditions.
2. This Permit shall become null and void if the construction under this Permit has not begun within one year from the date of this Permit and completed within eighteen (18) months after start of construction, except that these time limits may be extended at the discretion of this Department.
3. This Permit is valid only for use by the Applicant and may not be transferred to another unless written permission for such transfer is obtained from this Department.
4. This Permit is further subject to all laws and regulations now in effect or that may be subsequently adopted by this Department and may be revoked if it becomes at variance with the laws of the State, or if the Applicant may fail to comply with the provisions of this Permit.

Construction

5. Construction shall be in strict accordance with the terms of this Permit. The location, dimensions and type of all structures, excavation or filling is to be in accordance with the above noted plans submitted by the Applicant, unless written approval for such changes is granted by this Department. A copy of the plans and of this Permit are to be kept at the construction site available for reference during the construction period.
6. Eliminate sediment traps at terminus of Prong 1 (Unit II), and Upper Dividing Main as shown within the work plan dated September 1970.
7. Prior to construction, the Applicant will prepare a sediment control plan for approval by the Department for each segment including measures such as in-stream filters, debris barriers, over-digging, and in-channel sediment traps at appropriate intervals. This plan after approval is to be included in the contract specifications for construction and the Applicant is to assume responsibility for it being carried out by the construction organization.
8. Blasting or use of explosives in the channel will not be permitted unless written authorization for this is obtained from the Director, Maryland Fish and Wildlife Administration, State Office Building, Annapolis, with copy to this Department
9. The Applicant shall continually and permanently maintain in condition as completed the structure or banks along the stream passing through this construction site. Any undercutting, meandering or degrading of the channel or banks or deposition of material, resulting from the construction will be corrected by the Applicant by the use of riprap or other means approved by this Department.
10. The Applicant shall notify this Department in writing promptly when construction is begun and when construction is completed.
11. All future modifications, additions or changes to this construction except for ordinary maintenance shall necessitate a separate application for this and be submitted to this Department.
12. To protect fish and other aquatic resources, no dredging, excavation, or other construction work will be permitted between March 1 and June 30 on the following channels: Lower Worcester Unit II comprising of Prong 1, Prong 2, and Prong 3; Lower Somerset Unit III comprising of Cokesbury Branch, Costen Branch, Dublin Branch, and Tony's Branch.

13. That portion of Pusey Branch below Old Furnace Road and that portion indicated as "relocated channel" on the Project Map shall not be constructed. Construction shall not proceed below Station 332+00 (6235 feet below Prong #5) on the Pusey Branch.
14. Clearing and spoil disposal will be permitted only on North and West sides of channels through wooded or shrub areas where channel bottom widths are less than thirty (30) feet.
15. Prior to construction, the Applicant will prepare a plan, for approval by the Department to preserve and maintain scenic, aesthetic, and wildlife values, including the preservation of trees and shrubs during construction and the planting of trees and shrubs after construction for visual screens at all wooded or shrub road crossings and at other appropriate points.
16. The Applicant will prepare a maintenance schedule for mowing on rights-of-way to prevent damage to wildlife.

DEPARTMENT OF WATER RESOURCES

HMS/jk


Herbert M. Sachs, Director

ACCEPTANCE CLAUSE

1. This Permit and its Conditions are Accepted.
2. Permission is hereby granted to representatives of the Department of Natural Resources to enter in or upon the subject premises at any reasonable time for the purpose of conducting inspections pursuant to the provisions of Water Resources Law as contained in Article 96A of the Annotated Code of Maryland, as amended.

Accepted by: Montgomery County Commissioners
Acting as Authorized Agent For:

Kay Redden
Pres.

Date: May 30, 1972 Witnessed By: Elizabeth M. Warren
ccw

WORCESTER COUNTY COMMISSIONERS
RAY F. KLEIJEN, PRESIDENT
MARK O. PILCHARD, VICE PRESIDENT
LOUIS J. NICKMAN
WILLIS W. HUDSON
N. PAUL JOYNER

OFFICE OF IE
County Commissioners
FOR WORCESTER COUNTY, MARYLAND
ROOM 127 COURT HOUSE
SNOW HILL, MD. 21863

JOSEPH G. HARRISON
SUPERVISOR OF ASSESSMENTS
RAYMOND D. COATES
ATTORNEY
ELIZABETH M. WARNER
CLERK

June 21, 1972

Mr. Herbert M. Sachs, Director
Department of Water Resources
State Office Building
Annapolis, Maryland 21401

Dear Sir:

After reviewing the proposed construction permit for Dividing Creek Watershed we feel the following comments should be made:

Item #14 reflects clearing from the North and West side where the channel bottom width is less than thirty (30) feet. During the Public Hearing held here on January 25, 1972 comment was made that some variance could be given this width restriction.

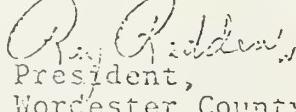
The clearing on one side will place restrictions on construction and future maintenance in some areas. It will also affect, to some degree, requirements under Items #5, #7, #9, and #16 of the permit.

We would like to have made a part of the permit the following statement:

"It is understood that Item #14 is negotiable at such time as final plans are developed and prior to contracting for construction."

With this understanding, we have signed the acceptance clause.

Very truly yours,


Ray F. Kleijen,
President,
Worcester County Commissioners

RFR:w



STATE OF MARYLAND
DEPARTMENT OF WATER RESOURCES
STATE OFFICE BUILDING
ANNAPOLIS, MARYLAND 21401

July 12, 1972

County Commissioners for
Worcester County
Room 127, Court House
Snow Hill, Maryland 21863

Gentlemen:

This is to acknowledge the receipt of your letter, dated June 21, 1972, and addressed to Mr. Herbert H. Sachs, Director, regarding the proposed construction permit for Dividing Creek Watershed.

I intend to give due consideration to your comments and recommendations when the construction plans are presented for our approval.

Enclosed is Permit No. WO-73-C-01, dated July 12, 1972. If I can be of further assistance please let me know.

Very truly yours,

Eduardo Azevedo, P.E.
Water Resources Engineer

EA:jb

Enclosure

